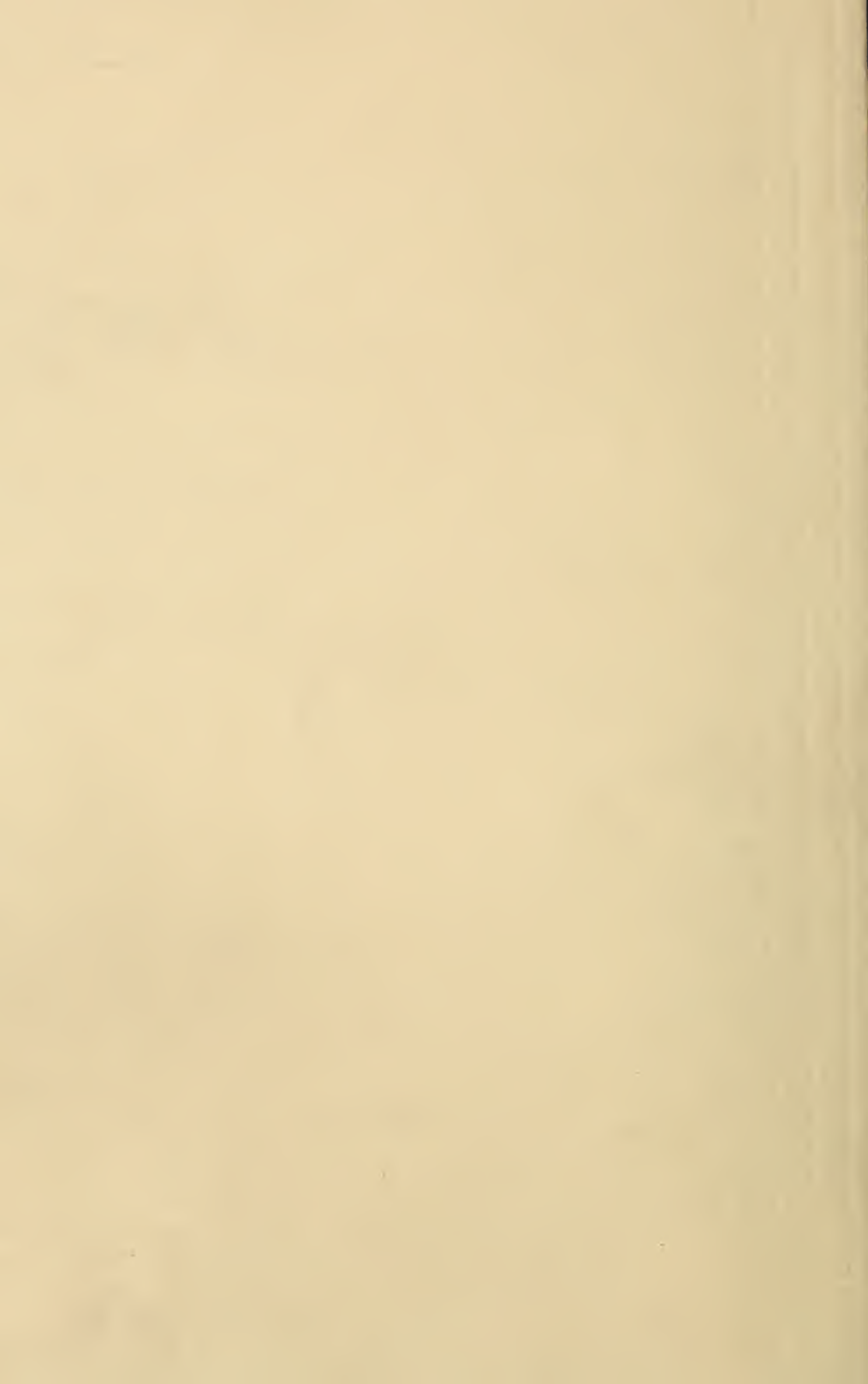


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VOL. XV. NO. 2.

JAN. 15, 1887.

PEACE ON EARTH
★
GOOD WILL TOWARD MEN



CLEANING
IN
BEE CULTURE

DEVOTED
TO
BEEKEEPING

& HOME INTERESTS.

MEDINA, OHIO

BY
A. ROOT

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Will pay 20c per lb. cash, or 25c in trade for any quantity of good, fair, average beeswax, delivered at our R. R. station. The same will be sold to those who wish to purchase, at 26c per lb., or 30c for best selected wax.

Unless you put your name on the box, and notify us by mail of amount sent, I can not hold myself responsible for mistakes. It will not pay as a general thing to send wax by express.

A. I. ROOT, Medina, Ohio.

JOB LOT OF WIRE CLOTH

AT GREATLY REDUCED PRICES.

SECOND QUALITY WIRE CLOTH AT 1½ CTS. PER SQUARE FT.

These prices are good only when you take a full roll. If you order less than a roll we charge 2c. per sq. ft. Sometimes the roll you order is gone before your order reaches us, in which case we send the next largest roll, unless it is a great deal larger.

SOME OF THE USES TO WHICH THIS WIRE CLOTH CAN BE APPLIED.

This wire cloth is second quality. It will answer nicely for covering doors and windows, to keep out flies; for covering bee-hives and cages for shipping bees; making sieves for sifting seeds, etc.

Number of Square Feet contained in each Roll Respectfully.

26 59 21 rolls of 217, 37 of 216, 2 of 215 s. f.
28 2 2 rolls of 233 s. f.
38 27 23 rolls of 316, 2 of 317, 1 each of 632, and 285 s. f.

FIRST QUALITY WIRE CLOTH AT 1¼ CTS. PER SQUARE FT.

The following is first quality, and is worth 1¼ cts. per square foot. It can be used for any purpose for which wire cloth is ordinarily used; and even at 1¼ cts. per sq. ft. it is far below the prices usually charged at hardware and furnishing stores, as you will ascertain by making inquiry. We were able to secure this very low price by buying a quantity of over one thousand dollars' worth.

(24 39 rolls of 200 sq. ft. each.
26 55 rolls of 216 sq. ft. each; 1 each of 199, 195, 201, 200, 227, 204 sq. ft.
28 71 rolls of 233, 10 of 224, 6 of 222 sq. ft.; 1 each of 257 sq. ft.
30 23 rolls of 250 sq. ft.
32 12 of 266, 4 of 256, 1 of 275 sq. ft.
34 25 rolls of 283 sq. ft. each, 1 of 198 sq. ft.
36 14 rolls of 300 sq. ft. each; 1 of 288 square ft.
38 1 roll each of 300 and 316 sq. ft.

A. I. ROOT, Medina, Ohio.

4 H.-P. ENGINE FOR SALE.

A Bargain for the man who is in need of a First-Class Engine and Boiler.

This is one of B. W. Payne & Son's Eureka engines, the same that we advertise in our catalogue. It has run 3 months since it was new; has had a 10-foot galvanized-iron smoke-stack added, and is in perfect running order. The man who is holding it had to put in a larger one to meet the demands of his trade. The price of a new engine and boiler complete, no stack, is \$275.00; but to make a quick sale we will sell this one with the stack for \$225.00, free on board cars at Higginsville, Mo.

A. I. ROOT, Medina, Ohio.

40-Horse-Power Engine for Sale.

Our new automatic cut-off 90-horse-power engine is now driving the machinery in all our buildings. Now, we want to dispose of our old 40-horse-power engine which has done such faithful work for us for the last eight years. It is a standard plain engine, Lord & Bowler make, 12x20, with a 9-foot balance-wheel and a 6-foot fly-wheel. We will offer it, put in good repairs, for \$350.00. We will throw in the stone upon which the bed-plate is bolted, free of charge. For further particulars, write us. Whom shall we hear from first?

A. I. ROOT, Medina, Ohio.

RUBBER STAMPS

DATING, ADDRESSING, BUSINESS, LETTER HEADS, ETC.



No. 1.



No. 3.



No. 2.

self and all who do business with you a "world of trouble." I know, you see.

We have those suitable for druggists, grocery-men, hardware dealers, dentists, etc. Send for circular.

A. I. ROOT, Medina, O.

FOR SALE CHEAP.

Owing to different arrangement of machinery in our new building we have for sale at half their cost the following:

Three 18-in. adjustable drop-hangers for a 2 15-lf in. shaft. Cost \$10.00 each; will sell for \$5.00.

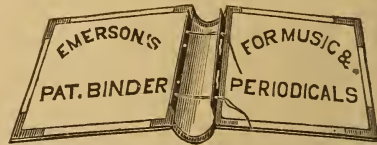
Nine 18-in. adjustable drop-hangers for a 2 7-lb in shaft. Cost \$10.00 each; will sell for \$5.00.

Ten 30-in. iron pulleys, 10-in. face, for a 2 7-lb in. shaft. Cost \$8.00 each; will sell for \$4.00.

Exhaust-fan that has run six years, but has become too small for our needs, costing over \$100.00 when new; will sell for \$25.00.

The hangers and pulleys are just as good as new, and a bargain to the man who needs them. The fan is some the worse for wear, but with a little repair will do good service for years to come.

A. I. ROOT.



You can not look over the back No's of GLEANINGS or any other Periodical with satisfaction, unless they are in some kind of a Binder. Who has not said—"Dear me, what a bother—I must have last month's Journal and it is nowhere to be found"? Put each No. in the Emerson Binder as soon as it comes, and you can sit down happy, any time you wish to find anything you may have previously seen, even though it were months ago.

Binders for GLEANINGS (will hold them for one year), gilt lettered, for 60 cts.; by mail, 12 cts. extra. Ten, \$5.00; 100, \$45.00. Table of prices of Binders for any Periodical, mailed on application. Send your orders.

A. I. ROOT, Medina, Ohio.

The Canadian P. O. authorities refuse to receive these through the mails, as they exceed the proper weight for merchandise.

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CONVENTION NOTICES.

The Northeastern Mich. Bee-Keepers' Association will hold its fifth annual meeting, Wednesday, Feb. 2, in the Common-Council Rooms of Bay City. W. Z. HUTCHINSON, Sec.

The Wisconsin State Bee-Keepers' Association will meet in the Capitol, at Madison, on Thursday, Feb. 3, at 9 a. m. If you think no argument is needed to show that these conventions, well attended and properly conducted, will be a source of profit to the bee-keeping fraternity, and pleasure to those who attend.

The State Agricultural Convention will be in session at the same place from Feb. 1st to the 4th inclusive, with a very interesting programme. The papers and discussions of this convention will be of interest to everybody.

Hotel accommodations abundant, at any price from one to three dollars per day, and return tickets over the principal roads at reduced rates.

We especially desire the attendance of those bee-keepers who have learned it all as teachers; we more especially desire the presence of those who have not learned it all, for they make the best of pupils. F. WILCOX, Sec.

C. M. GOODSPEED,

THORN HILL, ONONDAGA CO., N. Y.,

Furnishes any newspaper to single subscribers, away below the usual club rates. Our list comprises all the leading papers, and is the lowest-priced list in the field. Alsike, bees, queens, poultry, and small fruit. Write for 20-page catalogue. Mention this paper.

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PERFECTION COLD-BLAST SMOKERS.

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CINCINNATI, O.

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THREE-CENT COUNTER.

- | PLATE, 6-IN., glass, crystal or colored | 28 | 2 60
A little beauty, and handy for many purposes.
- 2 | SOLE AND GLOVE BUTTONE 28 | 2 50 || Both on a key-ring. All for 3 cents. | |
| 2 | BRASS FERULES for tool-handles | 25 | 2 40 |
| Dozen pkgs. 5-16, 6-16, and 7-16. You may have a dozen assorted or all of one size. | |
| 2 | PATTY-PANS, ROUND, 5-IN | 20 | 1 80 |
| Just right for small pies or maple-sugar cakes. | |
| 2 | PENCIL, LEAD, with rubber cap; 20 cts. per dozen | 17 | 1 50 |
| This is a plain cedar pencil, with an inserted rubber cap. | |
| 2 | SLATE-BOOK, 6 pages and pencil | 25 | 2 40 |
| Much smaller than the 5-cent ones, but very handy. | |

FIVE-CENT COUNTER.

- | SENSATION PICKLE-DISH, colored glass | 48 | 4 75
This is a beauty. The pattern is much like "polka dot."
- 6 | SENSATION SALT OR PEPPER BOTTLE 46 | 4 50 || With nickel top; same pattern as the pickle-dish, and colored glass. The top being nicked, it will not tarnish. | |
| 2 | SLATE-BOOK, 6 pages and a slate-pencil | 40 | 3 80 | |
| Very handy for taking notes. | |
| 2 | PROPELLING-PENCIL | 36 | 3 50 |
| This is a very handsome lead-pencil, black-enameled, and nickel ends. The point of the lead may be protected, or a new one inserted, when the first is worn out; 6 extra leads in a neat wooden box, for double above prices. | |
| 2 | BRASS FERULES for tool-handles | 40 | 3 80 |
| Dozen pkgs.; $\frac{1}{8}$, 11-16, and $\frac{3}{8}$. We have obtained some more of these that are stronger and nicer, and you may have a dozen assorted, or one size, just as you choose. | |

A. I. ROOT, Medina, O.

DADANT'S FOUNDATION FACTORY, WHOLESALE AND RETAIL. See advertisement in another column. 3btfd

A BARNES foot-power saw at half price. For particulars, address J. A. ROE, Union City, Ind.

FOR EXCHANGE.—Section-machine and cutter-head, for making the one-piece section; Root's make. Used but little; in good order. Will take \$60.00 for both. Sent from Jefferson, Ia. Also other machinery for hive-making. Write me at Trenton, Hitchcock Co., Neb. E. Y. PERKINS.

A BARGAIN FOR 30 DAYS ONLY.

Any one sending \$1.50 can have one pair of white Rabbits, or one pair Brown Leghorns, or one pair Plymouth Rocks, or 2 sittings of Langshan eggs, booked for April or May delivery. Say which you want. Yours for promptness and satisfaction, O. L. COVER, Covington, O.

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Write for prices of pure seed before buying, and save money. C. M. GOODSPEED,

Thorn Hill, N. Y.

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SEEDS

Tested, sure to grow, 150 kinds of POTATOES, all the new Berry Plants, Superior Stock. Prices low. Catalogue free. It will pay to get it. FRANK FORD & SONS, Ravenna, O.

What Mr. Beyer says: "Please

accept my best thanks for the splendid seeds received from your firm.

It would be a rather lengthy list if I should name all, but will say that amongst 33 first, and 3 second premiums awarded me at our fairs in Northern Indiana and Southern Michigan, 23 first premiums were for vegetables raised from your seeds. What firm can beat this?"

Seed of this quality I am now ready to sell to every one who tills a farm or plants a garden, sending them FREE my Vegetable and Flower Seed Catalogue, for 1887. Old customers need not write for it. I catalogue this season the native wild potato. JAS. J. H. GREGORY, Seed Grower, Marblehead, Mass.

HONEY COLUMN.

CITY MARKETS.

DETROIT.—*Honey.*—The market continues dull, with no change in prices. Best white comb, 12½; Buckwheat and fall flowers, 10@11. Extracted offered at 6@8. *Beeswax*, 23c. M. H. HUNT,
Jan. 10, 1887. Bell Branch, Mich.

PHILADELPHIA.—*Honey.*—White clover, fine, 14@15; white clover, fair, 12@13; buckwheat, fine, 11@12; same, fair, 9@10; one and two pound glass sections. Extracted, 6@8, as to quality. *Beeswax*, 20@23, as to quality.

Jan. 10, 1887. PANCOAST & GRIFFITHS,
242 South Front St., Philadelphia, Pa.

ST. LOUIS.—*Honey.*—Market is dull; choice comb, white clover, 1-lb. sections, 12@13. Other grades in sections, 10@11. Broken comb, 6@8; white clover, extracted, in cans, 5½@6. Southern in bbls., 3@5. California extracted, in cans, 4½@5, for dark, or amber; 5½, choice white sage. *Beeswax*, 21@22, as runs; 25, selected. W. B. WESTCOTT & Co.,
Jan. 10, 1887. 108 and 110 Market Street.

CLEVELAND.—*Honey.*—This market has been very dull the past two weeks. Prices are unchanged; best white 1-lb. sections sell at 13c; 2d quality, 10. Best white 2-lbs., 11@12; 2d, 8@9. Extracted is very dull at 6c. *Beeswax*, 25.

Jan. 10, 1887. A. C. KENDEL,
115 Ontario St., Cleveland, O.

CINCINNATI.—*Honey.*—Nothing new of importance since last report. Demand is very slow for all kinds of honey since Christmas, and occasional concessions have to be made to effect a sale of comb honey.

Quotations have to be made as heretofore; 3@7 cents for extracted honey on arrival, and 12@15 for best comb honey, in a jobbing way.

Beeswax.—Demand is good for beeswax, which brings 20@22c on arrival for good to choice yellow.

Jan. 11, 1887. CHAS. F. MUTH & SON,
Cincinnati, Ohio.

BOSTON.—*Honey.*—Demand very light since the holidays, and we quote: Best 1-lb. white clover, 13@14; same, 2-lb. sections, 11@12; California comb honey, 10@12. Extracted, 5@7. *Beeswax*, 24c.

Jan. 10, 1887. BLAKE & RIPELY,
57 Chatham St., Boston, Mass.

CHICAGO.—*Honey.*—Dullness prevails in the honey-market; no change in values since last quotations.

Jan. 10, 1887. R. A. BURNETT,
161 So. Water st., Chicago, Ill.

NEW YORK.—*Honey.*—There is no change to note in our honey market. The demand is limited, and prices remain unchanged. The finer grades of white honey are getting exhausted, but there is any amount of the poorer grades yet to be disposed of.

Jan. 10, 1887. THURBER, WHYLAND & Co.,
New York, N. Y.

FOR SALE CHEAP.—4500 lbs. choice white-clover honey in 10 and 25 gal. kegs and in 48-gal. bbls.; also 2500 lbs. very fine Spanish-needle honey in 25-gal. kegs and 48-gal. bbls. Will send samples on receipt of 2-cent postage-stamp for each.

EMIL J. BAXTER, Nauvoo, Hancock Co., Ill.

FOR SALE.—2000 lbs. best clover honey in Root's "raised-cover pails." One set, 30½ lbs., \$2.50; 4 sets, 122 lbs., \$9.25. Boxed, they ship same as bbls.

OLIVER FOSTER, Mt. Vernon, Iowa.

ATTENTION!

SECTIONS, BEE-HIVES, HONEY-BOXES, FRAMES, ETC.

LARGEST FACTORY IN THE WORLD.

Best of goods at lowest prices. Write for free illustrated Catalogue. G. B. LEWIS & CO.,
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IS A MONTHLY JOURNAL OF 16 PAGES.

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We will send free by mail one of our latest improved drone and queen traps to each yearly subscriber for the AMERICAN APICULTURIST. Price \$1.00 per annum. Sample copies free. Send the \$1.00 in common letter at our risk.

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The only bee journal printed in Canada, and containing much valuable and interesting matter each week from the pens of leading Canadian and United States bee-keepers. Sample copy sent free on receipt of address. Printed on nice toned paper, and in a nice shape for binding, making in one year a volume of 832 pages. 9tfb

WONDERFUL!

Owing to the reduction in subscription price to 25 Cents, on and after Jan. 1, 1887, we are able to make the following wonderful offer. We will send

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—AND—

GLEANINGS One Year for \$1.10.

For only 10 cts. more than GLEANINGS you can obtain the BEE-KEEPERS' MAGAZINE, whose price this year was \$1.00. Send for sample, and see what a splendid magazine we publish. Sample free.

Address BEE-KEEPERS' MAGAZINE,
22tfdb BARRYTOWN, N. Y.

Headquarters in the South.

FACTORY OF BEE-HIVES, ETC.
EARLY NUCLEI, ITALIAN QUEENS.

NINTH ANNUAL
CATALOGUE FOR 1887 NOW READY.

P. L. VIALLO, Bayou Goula, La.

FOR SALE. One Barnes combined scroll and circular saw. Has fourteen circular and ten scroll saws, one cutter-head, two mandrels, three gauges, one sawset, one emery wheel, all in running order; will sell for \$35.00, which is about half cost. Address E. C. APPLEGATE,
1-2d Poplar Flat, Lewis Co., Ky.



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Vol. XV.

JAN. 15, 1887.

No. 2.

T. P. ANDREWS' APIARY.

A FURTHER DESCRIPTION OF THE SAME.

FRRIEND ROOT:—Replying to your request for fuller information in regard to the cut of my apiary in GLEANINGS, I would say that the photograph from which the cut was made was taken with a lens not adapted to this kind of work, as it considerably diminished the apparent size of objects in the background, thus exaggerating their apparent distance. In reality, those rows of hives that look so long are only about $5\frac{1}{2}$ rods long. The apiary is laid off in squares, by streets eight feet wide, crossing each other at right angles. The one broad irregular street shown in the cut running from east to west is an error of the engraver. The squares between the streets are one rod square, and contain sixteen hives—four rows of hives each way. This puts the hives a little more than five feet from center to center. I have not found that the bees mistake their hives to any appreciable extent.

The honey-house is 14 by 18 feet. The south side is seen in the picture. The northwest corner of this building is occupied by a honey-tank holding 5000 pounds. It is securely made of 2-inch pine planks; is lined with tin, and rests on a strong frame, high enough to draw off the honey into barrels or cans. At the south side of this tank stands a four-frame Stanley honey-extractor. The pail in which the honey is carried from the extractor to the tank, stands in a deep rectangular tin pan, which I made several years ago, to use in making fdn. from plaster-of-Paris casts. This pan is to catch any accidental overflow from the honey-pail, and stands

between the extractor and tank. A piece of oil cloth, hanging from the upper edge of the tank, reaches down into this pan, to catch any drip from the pail while being emptied.

A much more convenient honey-house could be built on a side hill by placing the honey-tank on a lower floor, as does friend Christie, of Iowa.

For convenience in getting the full combs to the extractor, and the empty ones away, I have made two openings in the south side of the honey-house, about six feet apart, and one foot above the floor. I also made two sets of rolls, each about eight feet long. They are like ladders with rollers instead of rounds. These ladders are placed so as to project out through the side of the building about two feet, far enough to set a hive on before sliding it in on the rolls. My comb-boxes are simply hive-bodies with a thin bottom nailed on, and covered with a piece of cloth, one edge of which is tacked to one side of the hive, the other edge being tacked to a slender stick which keeps the cloth straight, and holds down the edge. Three of these comb-boxes are placed side by side in the cart, which I will describe at another time, and are drawn out to the hives, and filled with combs. These are taken back to the honey-house, and shoved in on the first set of rolls. The cart is then drawn forward to the next opening, where three boxes of empty combs are rolled out to fill the cart for a second trip to the hives.

T. P. ANDREWS.

Farina, Ill., Jan. 7, 1887.

Many thanks, friend A. You certainly have things very conveniently arranged. We should be glad to have you describe more fully your hive-cart.—In regard to the distance of hives, ours are 7 ft. from center

to center. Besides this, the entrances are turned to all points of the compass. Yet we find that bees in early spring and late in the fall are very often confused as to the exact location of their hives.

BUMBLE-BEES.

SOME OF THEIR PECULIARITIES.

THE question of E. D. Howell, in GLEANINGS for January 1, page 26, brought to my mind the fact that we have in Hilliard, O., an intelligent young man who, about seven years ago, during one season, had several colonies of bumble-bees. His first colony was secured early in the spring, and consisted of a queen and one other bee, seemingly just hatched, and a small bit of comb, not more than three cells, and these contained no eggs or brood, as he now remembers. The nest, bees and all, was placed in a box about eight by twelve inches, turned upside down on a board about two feet from the ground. The entrance was about one-half by two inches. He knew nothing of the inside of this nest-box until late in the fall; and when he opened it, he found neither honey, brood, nor bees, either dead or alive, but one beautiful comb, nearly round, and measuring about seven inches in diameter. The queen was long and yellow, while the workers were much smaller and quite dark. There was a middle class, which seemed idle, and he thinks they were drones. The other colonies were secured later, and seemed to be more or less demoralized all the season, doing their work in an inferior manner, though this may have been their normal conduct and skill, as they were a different bee from the others, being much smaller and much more inclined to sting. Their nests were also empty when opened in the fall.

My young friend gave me many interesting facts about his bumble-bees and about bumble-bees in general. He has never detected the least symptom that they have the swarming habit, and gives it as his opinion that they never swarm. In early spring he usually finds each colony composed of a single bee—the queen—and usually about a dozen eggs, the eggs being something smaller than hemp seed. His colonies kept their houses very clean and tidy; and the fact that they would invariably walk to the edge of the bottom-board, and, with a quick right-about movement, dump their excrement beyond the board on the ground, was a very prominent characteristic; and the queen was no exception in this particular. They also appreciated kind treatment, for while they *never* molested him in the least, they would not allow his younger brother, who would tease them by throwing chips at them, to stay in the neighborhood of their box homes; they would follow him for rods, that they might sting him, and they sometimes got in good work on the young rogue. They always kept a guard at the door, and in the evening this guard would close up, with grass, the entire entrance, except one little place, where she would sit and look out. In the morning this grass would all be taken away, but was replaced again each night. In very hot weather the queen and many of the bees, perhaps all of them, would sit on the bottom-board, outside of the hive. In his first colony he counted at one time as high as nineteen sitting outside at one time; but he had no means of knowing whether they were all the

colony. One day he moved one of the boxes about eight inches to one side, and a bee that came in from the fields tried for about fifteen minutes to find its home, but could not, so he helped it into the hive.

Hilliard, O., Jan. 8, 1887.

J. S. RICKETTS.

Many thanks for the interesting facts you have given us in regard to these bees. We have frequently had them under old bottom-boards in our apiary; and while we pursued our regular work, minding our own business, they gave us no trouble; and, as you may have read in October 1st issue, we could handle them, or pull apart their nest, without their making even a show of resistance or attack. Not so did they behave toward the small boy, equipped with a paddle and a pole to poke their nest up.

MAKING EGGS HATCH WHEN TAKEN FROM THE BEES.

TRANSFORMATION FROM THE EGG TO THE LARVA.

EDITOR GLEANINGS:—When first reading your A B C, when I came to that part relating to "Bees," you say that you have "never been able to get eggs to hatch when taken away from the bees," although the temperature was carefully preserved. At that time I had had but little experience in matters of that kind; but being of an inquisitive turn of mind I decided to make some experiments in this direction. However, I put the matter off from year to year until the summer of 1884, when the following experiment was carefully conducted: I placed a sheet of foundation in the center of the brood-nest, and left it there until it was filled with eggs, and a small area of larvæ had appeared on either side. I then removed the comb, and with the point of a pin I drew a line carefully dividing the larvæ from the surrounding eggs; the comb was then placed in the nursery, and left over night. An examination the next morning showed that no additional larvæ had been hatched. I then marked half a dozen cells containing eggs next to or joining the little patch of larvæ. With a little spoon I dipped out the milky food from the cells containing larvæ. I placed this food over and around the half-dozen eggs that were marked. I then replaced the comb in the nursery. Two hours later I made an examination with a glass, and found that, in each of the cells thus treated, larvæ were present, but no development was discovered in cells not treated with the milky food. These experiments were successfully carried on immediately around the patch of larvæ previously formed, for a period of 48 hours, after which no development could be had. I then treated a like number of cells near the outside limit of the field occupied by eggs, and had the satisfaction of seeing perfect larvæ in 80 minutes after supplying the milky food.

Another point worthy of note was the disappearance of the tissue inclosing the larvæ after the action of the milky fluid. From these experiments it would seem, first, that bees' eggs do not hatch, but are liberated by the action of the acid contained in the food for young bees, the larvæ having no means of biting or breaking his way out of the prison wall that surrounds him. Second, the disappearance of these tissues results from the neutralizing or destructive action of the acid upon the same. Third, that larvæ will stand 48 hours of confine-

ment, without physical development. This fact will perhaps account for the discrepancy of time in the hatching of queens being from 16 to 18 days.

Siam, Ia., Dec. 25, 1886.

R. B. ROBBINS.

Your experiments in making the queen's eggs hatch are very interesting. I have carefully looked through Cheshire's book, "Bees and Bee-keeping," upon this matter, but can not discover that he touches upon the point you bring out. If your experiments were carefully conducted it would seem that the egg, in order to hatch, requires the milky food; but as to whether this food absorbs the shell, or covering, of the egg, I must confess that I feel a little uncertain yet. Perhaps Prof. Cook, or Prof. J. Comstock can give us some light upon this matter.

A FEW POINTERS FROM THE OHIO STATE CONVENTION.

A FEW NOTES FROM ERNEST.

JAN. 14. I have just arrived home from the State Convention, held at Columbus, Jan. 11, 12, and 13. As we are about to go to press with this issue, I will throw out a few hints which I gathered there, in advance of the regular detailed report which will be sent in for next issue by the secretary.

PREVENTING THE GRANULATION OF LIQUID HONEY.

Our readers will remember that we have once or twice had occasion to refer to the liquid honey sent us by Mr. Goodrich. This honey still retains its beautiful transparency, although it has been subjected to varying temperatures. Mr. Goodrich, the producer of said honey, was at the convention. By request he gave his manner of keeping his honey, which, in brief, is essentially as follows:

The honey is extracted, and drawn into sap-pails where it is temporarily covered with cloth. To prevent its granulation he heats the honey in the pails to a temperature of about 120 or 130 degrees. This he does by placing a number of said pails, filled with honey, in a vat or tin trough of hot water, heated to the proper temperature. There is thus no danger of overheating the honey. While the honey is being heated it is stirred, so that every portion may be heated alike. He ascertains the proper temperature by inserting a thermometer in the honey itself, and not in the water, as we should naturally suppose. The honey is then put in Muth's 2-lb. bottles.

Of course, the idea of heating honey to prevent granulation is not new; but the manner of doing it will, I think, be valuable to some of our readers. Heating honey is apt to take away some of that delicate flavor; but I think all who taste the Goodrich honey will acknowledge that it is as fine as the finest.

FULL SHEETS OF FOUNDATION, VERSUS STARTERS OR EMPTY FRAMES.

I was surprised to see how many reported favorably in regard to frames with starters

only. I then explained the Hutchinson plan, and a number thought it seemed reasonable. No less authority than our good friend Mrs. Jennie Culp favored full sheets of foundation, notwithstanding, and she was backed by Mr. A. S. Goodrich.

WHAT A WOMAN CAN DO.

As you may guess, Mrs. Culp, of Hilliard, O., was at the convention, and I hardly need say that we all enjoyed hearing her tell of her experiences with the bees. Her kind face, and pleasant manner of speaking, make her one of the welcome members of the convention. Indeed, I think it is not too much to say in her favor, that I doubt if there are many bee-keepers among the sterner sex who are her peers as honey-producers, even though she is nothing but a little woman. Let us see: She took about 8000 lbs. of honey last season, and increased from 40 to 65 colonies. Her average per colony was, as you see, 200 lbs. She did all this work unassisted, with the exception that she got her pupil, J. S. Ricketts, to help her a few hours on one or two days. Finally, in the midst of the honey-flow, when she discovered that her strength was not equal to her energy, she left the apiary and went to camp-meeting to recruit up. One of the members of the convention then asked her why she did not get some one to help her, and thus have secured a very large average per colony.

"Why," said she, "I couldn't get anybody to help me, either for love or money; what could I do?"

She then stated, that, if she had not had the "light wheelbarrow sold by Bro. Root," she never could have handled those heavy crates as she did. Her honey has been selling for 16c for extracted, and 18c for comb honey. She mentioned one instance which I will relate here:

She had taken so much honey from one particular colony (nearly three hundred pounds) that she marked on one side of the hive, "I shall not expect any thing more from you this season." This was toward the close of the honey-flow, and she feared to drain it too closely. She had, however, left the surplus-receptacles on the hive. "A few days after," said she, "I thought I would just peep in and see what they were doing." She found it full of honey. On taking off and weighing, the scales showed 95 lbs. of honey.

These facts were not told us by the lady with any spirit of boasting—in fact, it was with some difficulty that we were able to get her to tell how much honey she had secured from the bees the past season. She has a good locality for bees, but I believe her management has a *great deal* to do with her success.

There are many other things that I should like to speak of; for instance, Mr. J. W. Newlove's manner of preventing, to a large extent, the swarming fever; Mr. Frank A. Eaton's method of inducing bees to go into sections, etc.; but I fear I should be encroaching upon the secretary's report. I believe, however, I have enlarged upon some things of which the nature of a report would not permit.

MR. T. F. BINGHAM.

His Visit at The Home of the Honey-Bees.

SMOKERS, SHALLOW HIVES, ETC.

MR. T. F. BINGHAM, of smoker fame, on his way to the convention at Albany, stopped off at Medina, partly on business and partly for a visit. I will say, at the outset, that whenever one of the old veterans in bee-keeping finds it convenient to visit the Home of the Honey-Bees, so-called, I regard it as a special privilege to show him about, and ask him all the questions I can. Whether he be a supply-dealer or not, he is at liberty to appropriate any idea he may find useful to himself, even if he should intend to use said idea at future date in competition to our business. This has always been our policy; and while we may sometimes have suffered in consequence of this kind of competition, taking into consideration the little hints and ideas we gain in return—we never lose.

Mr. Bingham and ourselves, for a number of years back, have made and sold smokers, and, as a matter of course, our goods have come more or less into competition. As was to be expected, in our conversation yesterday we freely discussed the relative merits of the Clark and the Bingham smokers. The inventor of the latter, after noting the manner in which we made the Clark, kindly offered suggestions, or, if you please, "short cuts," in its manner of construction; and while we may use said suggestions, we shall respect the principle of his smoker, which, indeed, Mr. Bingham gives us the credit of doing. When we were discussing this smoker question I inquired what he thought of the shaving fuel which Mr. Heddon recommended in his book, and which had been talked of lately in the journals.

"Well," said he, "I prefer hard-wood chunks to any thing else."

He then explained that the shavings were too apt to cause sparks, and, besides, would not last as long as the hard wood. He stated that it was a prevalent opinion among bee-keepers that rotten wood is the fuel for smokers. This opinion he regards as a great mistake. The rotten wood will not only burn out too quickly, but is open to the objection of shavings; namely, a too frequent cause of sparks.

While no doubt friend Bingham is correct as regards the proper fuel for his own smoker, yet with the Clark the difficulty with sparks from rotten wood and shavings is to a great extent obviated, I think, by virtue of the cold-blast principle. Of course, I am not forgetful of the fact that the Bingham possesses good features which the Clark has not. I will not, however, take space to discuss it here, but defer it until next summer, when I propose trying both smokers side by side, and, I hope, letting them stand solely on their own merits.

I asked Mr. Bingham how long he could make his smoker last, without going out, charged with the hard wood. If I am correct, his reply was that it would last *all day* without refilling, and that it would give him smoke just when he wanted it. This, surely, is about all that could be desired. But it

seems that Mr. Heddon, his "friend," Dr. Miller, and others, prefer the shavings. Perhaps, however, these latter gentlemen have not acquired the knack of burning hard wood.

SHALLOW HIVES.

Knowing that our friend Bingham for so many years back has used, and very successfully, too, the shallow closed-end frame ($6\frac{1}{2} \times 23$ inches), I took the opportunity to question him in regard to the working and merits of such a frame, with which he says he has had an experience of nearly 20 years. A few facts from him will be of interest just now, when the discussion of shallow frames is before bee-keepers.

Mr. Bingham's frame is $6\frac{1}{2} \times 23$ in., as already given, with closed end-bars $1\frac{1}{2}$ inches wide. This frame has no bottom-bar. The top-bar is a stick, $\frac{1}{2}$ inch square. At each end of this is nailed the closed end-bars, the stick being so nailed that one of the corners will form a comb-guide.

One would naturally suppose that a frame of this description would hardly be secure enough, and that the end-bars, on account of the absence of the bottom-bar, would be easily knocked out of "whack," as the expression runs; but Mr. B. assured me that such was not the case. Eight of these shallow frames, or any other number as convenience may require, are held securely together by compression. This is effected by a well-known principle; namely, a wire loop, or link, each end of which is hooked over a screw-head. A little stick, equally distant from each screw-head, is made to spread the wire taut.

It did not seem to me that such a contrivance would hold securely enough; but Mr. Bingham assured me that he had used it a good many years. To satisfy myself more fully I took seven shallow-depth closed-end frames which we happened to have on hand, and looped them together, as described above. I dropped the seven, as thus secured, on the floor, and scuffed them about with my feet, and yet they held together.

Mr. Bingham told me he could invert his brood-chamber if he chose to do so, but that he did not find it necessary. If I remember correctly, I believe he said he did not even alternate the sections of his hive, although it could easily be done. I then asked if, from his experience, it were practicable to handle these shallow hives instead of frames. He replied, that it was possible to a very large extent. He told me he had not handled the frames of some hives for several years; that he could perform many of the needed operations by simply handling *hives*. By grasping one of his shallow sections, and holding it up to the light, he could hunt out the queen-cells on the several frames at once. He, said, that in a shallow brood-nest, the exact location of the queen can often be determined by the peculiar commotion of the bees toward a common center. Then, if he chooses to catch or view her majesty, he loosens and spreads apart the frames, and selects the one whereon she is to be found. He can also, when occasion requires, shake a large part of the bees from whole sections at once. In short, our readers will see that

Mr. Bingham verifies Mr. Heddon's statement as to the possibility of handling *hives* instead of *frames*.

Although the construction of the Bingham hive differs in detail from the Heddon, yet, in a few of its fundamental principles, the former is similar; as, for instance, closed-end shallow frames, held together by compression; and the possibility of handling *hives* instead of *frames*.

I hope I am not trespassing on any of Mr. Heddon's claims, as I am sure Mr. Bingham concedes to Mr. Heddon the right of his invention. Mr. B. has told me that he is glad that Mr. H. has brought out his invention.

In conclusion, I desire to say that all who shall be so fortunate as to make Mr. Bingham's acquaintance will find him a pleasant conversationalist—in short, a gentleman. While he has a keen sense of justice, and his own rights, they will, I think, find him disposed to be fair.

EXTRACTED HONEY.

E. FRANCE'S VS. HEDDON'S METHOD.

HAVING read Mr. Heddon's article in GLEANINGS, Dec. 1, entitled, "Extracted Honey," etc., I arise to make a few remarks on his system as he has it laid out. I understand he works to a large extent for comb honey and considerable extracted honey. Now, as I am in the extracted-honey business quite largely, I study carefully every thing I can get on the subject, especially from as good authority as Mr. H.; but I don't see how it is possible for me to wait until the honey-season is over, and then do our extracting. We possibly could work our home yard in that way, but I don't see how we can work our five yards, away from home, by his plan, as we have nothing but a tent to work in, and that we carry with us. We extract four and sometimes five times at each yard, taking out from 1500 to over 2000 pounds each time from each yard. Now, to tier up combs to hold the honey, we should need to have combs to hold 9000 pounds of honey in each yard. As about 2000 pounds of honey would be required to winter each yard, we should have spare combs in each yard to hold 7000 pounds of honey, or, for the six yards, spare combs to hold 42,000 pounds (which was our surplus for the year 1886). As we have no place away from home to store the spare combs where they would be safe, they would all have to be hauled home; and what a time we should have with robber-bees, extracting and fussing with all those spare combs after the honey season is over, which closes with us from the 5th to the 20th of July!

As for the quality of the honey, judging from the reports of my customers, many of them dealers of long standing in the honey-trade, I am led to believe that our honey is A No. 1, and I believe our location has very much to do with it. We are located among the bluffs of the Mississippi, still away from the river, where the hills are dry; and the honey, as a rule, is thick when gathered. Often the honey in new combs is so gummy that it is impossible to extract it and save the comb.

I don't know any thing about Mr. Heddon's locality; but judging from his place on the map he is near the lake, and I should expect the country to be flat, and more or less wet, and the honey may re-

quire tiering up to dry it out—very much more so than among the hills here. Bee-keepers living in a hilly locality extract often, and there is no talk of unripe honey. I know there is no use of so much fussing here to get first-class ripe honey.

Platteville, Wis.

E. FRANCE.

Thanks, friend France. I think it is quite likely, as you suggest in your last paragraph, that the difference in locality has much to do with the matter of ripening honey.

CONVENTION AT ALBANY.

NOTES BY THE WAY.

IT is now Monday morning, Jan. 10, and I am waiting for the train. I have got some postal cards, addressed to myself, in my pocket, and whatever I find of interest I propose to send back to the printers, and have them give you the latest intelligence up to the moment of going to press.

I am now at Cleveland, Ohio. I find that friend Kendel, of the Cleveland Seed Store, seems to be doing a fair business in comb honey. One-pound sections, best, bring 13c; second quality, from 10 to 11c. A lot that *looked* very fine, he says don't sell, because customers have found the sections inside do not turn out so nice as those packed *next to the glass*. Do you see how it works, friends? Glass sections do not sell well in Cleveland, unless at a season when no other is to be found in the market.

Mr. K. has an ingenious method of his own invention for testing seeds. A coil of gas-pipe is placed in the fire-box of the base-burning stove that warms the store. Proper attachments carry the pipe under benches near the window. On these benches, small pots containing seed are placed, each pot containing 25 seeds. By counting the number that vegetates, the percentage can easily be estimated. The same coil of pipe warms a tank of German carp that seem lively enough, even in the depth of winter. This arrangement seems to answer every purpose of a regular hot-water warming apparatus; but altogether it did not cost over \$10.00, aside from the cost of the pipes, which was about \$40.00. A sort of "stand pipe," with which the ends of the coil are connected, allows room for the expansion of the water. By means of such an apparatus, any part of a building may be warmed, and the consumption of coal is but little more than what is ordinarily needed.

I found lettuce from Cincinnati already on the Cleveland market. It is a small variety, that does not make a head. It is very crisp and tender, and seems to suit this market best. I succeeded in selling the crop of Boston Market in our greenhouse at home. I was pleased to find at friend Kendel's the seed of this Cincinnati lettuce, and a package was mailed back home to be sown in the greenhouse at once.

At the office of the *Ohio Farmer* I was pleased to make the acquaintance of the editor, M. J. Lawrence. Their circulation has now become so large they keep two large Campbell presses running constantly. Quite

a goodly company, both of men and women, assist friend L. in getting out weekly one of our best agricultural journals.

I am now writing on the cars, *en route* for Albany.

These fast trains do not stop for supper, and the dining-room car is therefore the only chance. A dollar for supper seems even worse than a dollar for a dinner; for who wants to eat a "dollar's worth," or any thing like it, just before going to bed? However, as I am employed by the readers of GLEANINGS to travel and take notes, I thought I would see if I couldn't get something out of even a "dollar supper" for their benefit, and I got it. What do you think it was? Why, this: I found on the bill of fare, "Beefsteak and Mushrooms;" and as I had noticed in the eastern market reports mushrooms at \$1.50 per lb., I have been getting the mushroom fever. They are to be raised in winter in a warm cellar or cave. Mammoth Cave is said to answer nicely. But suppose I get some raised how shall I know when they are just right, and fit for market? Why, if they are just like those I had on the dining-room car, to be sure they are right.

Well, it is after supper, and mushrooms are tiptop. They taste a good deal like those that grow in the fields in summer time. I believe there is money in them, grown in winter. "Gardening for Profit," tells all about growing them.

A farmhouse is on fire this bitter cold night. The roof is just falling in as we rush by. The family doubtless fired up the stoves strong to keep out the frost, and this is the result. Home, and all its contents gone. Take warning, friends; look to your flues and chimneys. When the weather is severe, and you are firing heavy, keep watch of things. Fathers and mothers, look after your homes and little ones.

Continued next issue.

FIRST-CLASS COMB HONEY.

THAT WHICH HAS REMAINED LONG ON THE HIVE,
THE BEST.

I HAVE just been reading what friend Heddon says, on page 882, about extracted honey. I believe he is correct, and also that what he says in regard to extracted is equally true of comb honey.

Friend Root, on page 77 of the A B C book you say, "Very white new comb honey is seldom of the fine, pure, sweet flavor of honey that has been a long time capped over, such as is found in the dark-looking comb." You also tell us about that honey which you left on the hives until winter, and then cut out of the frames, which was the nicest, richest honey you ever saw or tasted. You don't get much of such honey now. No, the most of our comb honey now is taken from the hives as soon as finished, to prevent its being soiled; and the consequence is, a large part of the honey found in our markets is very white and nice-looking; but when it is eaten it doesn't give satisfaction. The fact is, it is nothing more nor less than green honey. If you were buying for your own use, you would not buy such honey. I think you would get that which is much better, except in looks, for from 2 to 5 cents

per pound less. I could not help thinking of this when you spoke of that "snowy white" honey, in GLEANINGS recently, which you were selling for 18 cents. Such honey will sell well, but it will not sell next year's crop. With such honey it would be difficult to develop a market in villages and country places; people will buy it for awhile, but will soon get sick of it, and "stop short off," as friend Martin says. I think there never will be an overproduction of first-class honey, either comb or extracted. The trouble is, only a small part of the honey produced at the present day is first-class in every respect.

I believe this is an important matter, and I think that, if the brethren would all take hold and "pull together," instead of sitting down and crying overproduction, we should soon see an improvement in the honey-market.

O. G. RUSSELL.

Afton, N. Y., Nov. 29, 1886.

Thanks, friend R. While I think you are correct in the main, I can not think that nice white honey that has been taken from the hive as soon as capped is "green" or unripe honey. We have been selling just this class of honey, and it has always given good satisfaction. I believe, however, as stated in the A B C, that honey long capped over has generally a little finer flavor; but whether it were better to sacrifice the snowy whiteness of our market honey for this slight improvement in flavor, I have my doubts.

MANIPULATING FRAMES.

POND'S METHOD.

J. E. POND, Jr., has got hold of a correct principle in handling frames for the production of comb honey. What is the use of having movable combs if we do not take every advantage of so great a principle? I am pretty sure that another season will demonstrate the fact to the satisfaction of every one who will take the trouble to experiment. To illustrate his plan: I will state my practical application of it by describing my hive. I use the ten-frame Gallup hive, frames 11½ in. square. Hives inside, measure 12 x 12½ and 15 inches long; the frames hang crosswise; and the 10 frames, spaced 1½ inches, just fill the 15 inches. Now, in the opening of the clover in the spring, I just shove the ten frames up and put in a wide (2-in.) frame at one end, filled with 4 sections and fdn. Then I have ten brood-frames in the space of 13 inches. This, I think, is about right. At the proper time I set on top my case of pound sections, and so work for pound section honey till the close of the season, or about the last of July. I then take off and put away all top cases of 1-lb. sections. I now open the brood-nest, take out the wide frame at the end, and I find four 1½-lb. frames of nice clover honey—six pounds or more, No. 1 clover honey. I now proceed to pull back or spread the ten brood-frames on the 15 inches, which puts them 1½ inches from center to center, and they will find enough during the fall flowers to build out and fill up for winter. We never get any surplus here in Southern Missouri in the fall, but they get enough in September to winter well. I should like to hear others report on this plan.

W. H. RITTER.

North Springfield, Mo.

A CHAPTER FROM REAL LIFE.

FORGETTING TO CLOSE THE DOOR OF THE HONEY-HOUSE, AND THE CONSEQUENCE.

IN the bill of goods I ordered of you were a lot of nest pails. I ordered them for the purpose of extracting honey. There was but little call for the large pails, while I supposed they would sell the best. I could not dispose of them for what they cost me, consequently I have quite a number on hand. I found that quart pails with 3 lbs. of honey sold by far the most readily, and I ordered a gross of them from Fort Wayne. They cost a little less than 5 cts. apiece, including freight, and in them I sold the remainder of my extracted honey very readily for 30 cts. each, including pail.

I had a ton of honey, including section and extracted. I commenced selling sections at 14 cts., but most of them for a shilling, and the dark, or fall honey, for 10 cts. I had 24 swarms in the spring, and put 54 in winter quarters. Though they apparently had honey enough for winter stores, they were dying badly, and some were affected with dysentery.

I was compelled to move my bees to keep good friends with my neighbor who owned land but a few rods from where they were, and I would not have a quarrel with my kind neighbor for the worth of the bees.

ITALIANS, BLACKS, OR HYBRIDS—WHICH?

I have Italians, hybrids, and blacks, in my apiary. As honey-gatherers, I know no difference. Some of the blacks are the most docile bees I have, while others of the Italians and hybrids are too vindictive to handle without a quantity of smoke. I have had but one swarm ruined by worms in many years, and those were blacks. After filling nearly 100 sections, they took to swarming, till but few bees were left; then the robbers ruined them, and the worms made a clean sweep of them. I would not care for Italians, if I did not hate to hunt black queens so badly.

JUST HOW I GOT CAUGHT:

It has been a very busy season with me, putting up and repairing buildings, with an abundance of work on the farm; and being of a nervous temperament (some like friend Root) I often get in a hurry, and from a fast walk I would get into a run. I had been taking off sections, and, for want of time to put them on the shelves, I packed them helter-skelter on the floor of the honey-house till a more "convenient season" to put them away. It was near the close of the honey season, and bees got crazy at the slightest smell of honey. In my great hurry one day I went into the honey-house for something; and when I went out I slammed the door after me, not thinking but it was fast, and went about my business. After awhile, wife called me, and said I had better look and see what the bees were doing. I did look, and, sure enough, there were bees enough to make two good swarms, in the house, on the windows, and piled on the sections; and when I went in they "piled" on me too. If ever a fellow was stumped, I was. But necessity always had been the mother of invention; and if it failed this time it would be the first with me. I said, "Wife! I'll kill them with sulphur," and at it I went, and made smoke enough, as I thought, to kill any thing. I closed the door, and left them to their fate. In half an hour I came

back and found but few dead. I thought best to renew the sulphur smoke. I did so, but it almost choked me, and I slammed the door after me, and left them a second time to their fate. After awhile I went back and found the door standing wide open, and such piles of bees I never saw piled into one room. I said, "What shall I do? what shall I do?" and what would you have done, friend Root?

I have read somewhere, that, if at first you don't succeed, try, try again. I said, "Wife, I have got to kill all my bees" (57 swarms). But another thought struck me. I had seen bees smoked to death, so I put in kettles and iron dishes, after making fires in them, and piling them full of trash, just as we used to smoke mosquitoes when it was all woods around us, and I was careful to shut the door this time. The house was made tight, intended to keep out the moths and millers, and the smoke soon began to tell seriously on the bees, but I let them sweat till not one could fly, and I could not stand it longer than I could hold my breath. I let in what air I could through the window-screen, occasionally opening the door; and when the smoke cleared away so I could move the sections into the closet, brushing off the dead bees, it was a fearful-looking place.

I said, "Wife, I have conquered at last." She said, "You look as if you were about conquered too."

You had better believe I was happy. Now you will ask what about the honey (for there was the best part of a ton). Was it not ruined by the smoke? Of course, I supposed it was. At first, for a week or two it smelled too smoky to be salable, but it gradually wore away by giving it all the air I could, till that which was nicely capped had no taste of smoke; but all that was uncapped retained the smoky flavor a long time; but it is all disposed of, except what we need for our family use. I have always been particularly fond of seeing and handling bees; but I pray that I may be excused from handling any more in a honey-house.

La Otto, Ind., Dec., 1886.

E. S. HANSON.

Friend H. wants to know what I would have done under the circumstances. Well, I would not have killed my bees, whatever I did. You say you were happy after you got them all killed. Now, the thought of those murdered bees would not have let me sleep nights had I been in your place; however, there is no use wasting words on that part of it, for they are gone now. I have been through just about the same experience a good many times, and I will tell you how I manage. Of course, the first thing is to shut the door; and, by the way, the latches to the door of the bee-house ought to be so arranged that they shut easily and securely every time. I have often thought that a spring to the door, such as we have on our screen-doors, would be a good investment, then have the catch so it will fasten the door, no matter where or how the door may be left. Prevention is better than cure, you know. But if the bees do go in because of the door being fastened open, or something of that sort, shut all the doors and windows securely, so that no more can get in. When the bees collect in a large quantity on one of the windows, raise the window, and with a brush broom, or something similar, get out as many as possible.

When another lot collects, let them out in the same way, and in a very little time you can have every bee out of your room. In view of such occurrences I would have a good wide shelf just below the window, and keep this shelf clear of rubbish. Then at any time, by raising the window a little you can easily brush out all the bees that have dropped down, so as to keep your house tidy and neat. Where there are only a few sections that the bees can work on I would put them in a tight box or cupboard. Simplicity hives piled up will hold frames of comb or sections of honey very well temporarily. Now, if you want to cure your bees of hanging around the honey-house doors or windows, just let them go in the room and out at pleasure, until they are satisfied there is not a drop of honey to be obtained. If it is during a season when they rob badly, Simplicity hives piled up may be a rather bad arrangement, for bees smell the honey through the cracks. In such a case, cover the pile of hives with a large sheet, or, better still, an oil cloth, such as is used to spread over wagons; or if your room is not large enough, open your bee-tent, and spread that over it. Surplus comb honey ought to be very secure indeed, to prevent bees from scenting it. Friend Heddon and some others have recommended double sheets of wire cloth, with a space between them. This prevents bees on the inside from passing honey through to those on the outside; but whatever way you take to make it secure, don't have any mistakes about it, or you may have such scenes as our friend describes so graphically in the above article.

SEPARATORS OR NO SEPARATORS.

ALSO SOMETHING IN REGARD TO THE WORKING OF HEDDON'S NEW HIVE.

I ENTIRELY agree with G. M. Doolittle, on page 439, that we have been making a move in the wrong direction in regard to separators. Until three or four years ago I think it was pretty well settled that comb honey could not be satisfactorily produced without separators. About this time a number of comb-honey cases appeared, designed to be used without separators. Some of these were very convenient to use, and, aside from the non-separator feature, were much better than the old systems. These were "hoomed" by those favoring them; and from being written and talked about so much it became fashionable to do without separators, and many who really preferred them were ashamed to admit that they could not do without them. Everybody followed his neighbor.

One of the most characteristic traits of the American people is their tendency to popular crazes, a tendency to take up every thing that is new and attractive, and carry it to extremes. Never more strikingly shown than in their amusements—as, for instance, roller-skating and progressive euchre—this tendency has its influence in every department of life. Any business that is more than ordinarily profitable is rushed into, and almost immediately overdone. Bee-keeping is suffering now from just such an inundation on a small scale. But this is a digression.

With all the hue and cry against separators, everybody seemed to think that everybody else was giving them up, and that he must fall into line or be left behind. How the movement against separators was forwarded, may be learned from the way the subject was handled at one of our conventions. After some talk in which the anti-separator men aired their views, while those who favored separators for the most part stood back and listened, the subject was put to vote, and all who could secure marketable honey without the use of separators were asked to stand up. Of course, the most of those who voted at all stood up. Almost any one can produce marketable honey without separators. That is not the question. The report of that convention, stating that three-fourths of its members could get along without separators, was, to a certain extent, misleading, as giving the impression that they were in favor of doing without them. I do not think this was the sentiment of the convention. I think most of them were in favor of separators, and continued to use them, and believe in them to-day. But their half-unwilling admission, that they could get along without separators, no doubt had its influence in inducing others to try the non-separator case, who, finding themselves reasonably successful with it, became loud in its praise.

I can produce comb honey without separators. I have done so successfully. This season I had over 2000 lbs. of honey made without separators. There may have been 25 sections that could not well be crated. Perhaps 200 required a little extra care in crating, while the rest could be put together anyhow without the combs touching. Still, I know that, without extraordinary care, I should not obtain as good results every season; and as I can see no very important benefit to be derived from dispensing with separators, I shall continue their use, and shall probably make no more cases to be used without them. I can certainly get as much honey by using separators as without them. When they are not used there is constant annoyance from the unfinished sections at the sides, and particularly in the corners of the case, unless the case is left on until all are finished; and no one who expects to produce the best honey can afford to do this. With separators the work of the honey-producer goes on much more smoothly and satisfactorily, and the marketability of the honey is not so dependent on chance.

The wide-frame system is, in my opinion, the best way of using separators, but they should not hold over one tier of sections, and should be so arranged that they can be tied up to any desired height. Expansibility and contractibility are both valuable features in any hive. A hive should be so made that its capacity may be readily and quickly enlarged or contracted, to suit the extreme requirements of any colony, and so that these changes may be made gradually.

This brings us naturally to a discussion of the Heddon hive, of which more, perhaps, has been claimed in this direction than of any other hive. I have used a number of them during the past season, some of them since early spring. I am thus enabled to form a tolerably correct idea as to the merits of the hive. I had formed a very favorable opinion of it before I had ever seen it, and I must say that, in practice, it nearly fulfilled my highest expectations. There were some drawbacks, how-

ever, which I think ought to be mentioned. You have all heard of its advantages, so I will not dwell on them, but only refer to what I consider its weak points, and its failures to do what has been claimed for it.

The first shock that was given to my good opinion of the hive was when a too ambitious queen found her way upstairs and filled nearly every section in one case with brood. This, of course, can easily be prevented by a queen-excluding honey-board.

A more serious trouble came when dry weather caused the end-bars to shrink so that the set-screws no longer held them tightly enough; and in hives that had been inverted, the frames slipped down until they rested on the bottom-board, almost closing the entrance. Then rains came, and the sides of the hive and the wooden screws swelled so much that I could not turn said screws; and colonies that I particularly wanted to examine might almost as well have been in box hives for all I could do with them. The hives, I may say, were well painted, and the screws had been soaked in linseed oil.

The frames are not nearly so movable as ordinary frames, even when they are new; and I am afraid that, with time and use, propolis will find its way between the frames and the ends of the hive. The heat of summer will melt this propolis, and stick hive and frame so tightly together that, in time, it will be difficult, if not impossible, to remove frames from the hives. This is a very serious objection to the hive. I do not think we can afford to abandon movable-frame hives.

"Why do you want to handle the frames?" I think I hear some one say. Because foul brood is abroad in the land, and an experience with it that has cost me several hundred dollars has taught me that it is next to useless to attempt to get rid of the disease unless it can be detected in its early stages, and that this can not be done except by frequent and thorough examinations of the brood-combs.

I would most willingly adopt the principle of handling hives instead of frames if it were not for foul brood; but with this dread disease threatening me I am afraid to adopt a hive and frame that will make it any more difficult to detect and subdue it.

My next count against the hive is, that it has utterly failed, with me, in one of the strongest points claimed in its favor. We have been told that, by its use, we could secure all the honey in sections, leaving the brood-chamber empty. I found, though, that, as the end of the fall yield approached, the brood-chamber was steadily filled with honey until, at its close, the combs were heavy with honey, to the almost entire exclusion of brood. This was the case with all colonies, blacks as well as Italians, in which the brood-chamber had been closely contracted, although no hives or frames had been reversed during the fall yield. I have about 35 colonies, which were in Heddon hives, or contracted to five Simplicity frames, which I am afraid will not winter well. They are in excellent wintering condition otherwise, but the colonies are much smaller than I should like.

Dayton, Ill., Dec. 23, 1886.

J. A. GREEN.

Friend G., I think you have hit it exactly in what you have to say about "popular crazes." Just now, sliding down hill on a toboggan seems to be the craze in many of our cities; and riding behind a fast young

horse in the daintiest-got-up cutter is not to be compared to sliding down hill and going back on foot, pulling your toboggan after you. As the latter course gives outdoor exercise to some who might not get it otherwise, I guess we had better say amen to it, and not grumble. I have been greatly rejoiced to see Caddie and Connie and cousin Mabel—yes, and Huber too, when the weather is not too cold, exercise their lungs and muscles in sliding down hill, almost from morning till night, in a way they never did before. Dress the children up warmly, and encourage them in rough and tumbles out in the snowdrifts. When our whole nation shall get a craze in that direction, we can thank God for it.—I have felt a good deal as you do, all along, and I am inclined to think Heddon agrees with you, from the fact that he has turned about and adopted wide frames and separators. I think all the difficulties, or nearly all, can be readily remedied. Have the set-screws made of galvanized iron, which may be turned out and dipped in oil occasionally, and I think you can turn them with your fingers. I was surprised when I saw old-fashioned screws on one of friend Heddon's sample hives. The very minute I saw that Heddon recommended a frame almost tight fitting in the body of the hive, I decided at once they would not be very long movable in our locality, on account of propolis. The same arrangement was exhibited at the Northern Ohio State Fair, in Cleveland, years ago, and I afterward saw some hives where the frames had been pushed in when the propolis was soft from the heat of the summer sun. They were about as securely cemented in as you could do it with melted rosin.—In regard to the foul-brood part, friend G., I should say that a bee-keeper has no business having foul brood in his apiary, and therefore need not calculate on it. If the above does hit us, no matter.—Perhaps Heddon, by a different arrangement, will be able to keep the honey out of his brood-chambers.—I think the progeny of certain queens are more disposed to fill up solid all around the brood-nest, than others are.

PRODUCING BEESWAX FOR THE MARKET, INSTEAD OF HONEY.

Can We Not do it Now, Since Honey is so Low?

SOME THOUGHTS AND SUGGESTIONS GROWING OUT OF AND PERTAINING TO THE ABOVE MATTER.

FRIEND ROOT:—This question of wax secretion is really one of the apicultural problems of the day. I have been reading all that I can find upon the subject; I have also been corresponding with some bee-keepers who have been experimenting in something the same line as I have. I have thought about it in the day time, and lain awake nights, and pondered; and it is my firm conviction that we have been losing a big thing in not utilizing the natural wax secretion that is going on more or less all through the working season. I am aware, that when wax is needed for comb-building, the wax secretion is greatly in-

creased; but at the low price at which honey is sold, is it not possible that it would be profitable to *encourage* wax secretion and natural comb-building? To what extent, when, where, how, in what manner, and under what circumstances, it would be advisable to have natural comb built instead of using fdn., will probably take some time to decide; but if we will only start out with this object in view, and *work*, we can find out. In my locality, and with *my* management, I know that the use of fdn. in the brood-nest, when hiving swarms, is unprofitable; but I do not think the matter stops *here*. I think there are still more advantages to be gained by utilizing the *natural* secretion of wax, but just how it is to be done I do not know, and I don't know but I am glad I do not, as there is now before me the *pleasure of finding out*. I have not a particle of doubt that there are times, places, and conditions, when the use of fdn. is *very* profitable; and what we need to learn is, how to use it beneficially.

I sometimes feel impelled to write an article upon this subject, but its magnitude appalls me, as there are so many things to be considered, so many ifs and ands, that I fear I could not do it justice.

Rogersville, Mich.

W. Z. HUTCHINSON.

Our friends will remember that this has been brought up at different times through our past volumes. Friends Hasty and Viallon have given us the most light on the subject, but we are still a good deal in the dark. The above letter from W. Z. Hutchinson was not intended for print, but it comes in so well with several other suggestions that I have taken the liberty of giving it just as he gave it to me, and I think he will not object.

VARIOUS MATTERS.

APIARY NEAR RAILROAD.

A CORRESPONDENT wishes to know (p. 171, 1885) if it will be a damage to an apiary, if located within ten rods of a railroad. As a rule, I should say not; yet if the bees are to be wintered in a cellar or underground cave, the jar from the trains might cause trouble. I have little experience along this line, as I live eight miles from any railroad; but a friend of mine who lived within six rods of the Auburn branch of the N. Y. C. R. R. told me that he believed very much of his loss during winter was owing to the disturbance of his bees caused by this railroad. While there one day he invited me to go into his bee-cave, or special underground repository in which he wintered his bees, about train time, to see what I thought about the matter. The repository was as nice a one as I ever saw, as the sides and bottom were of clean white sand, and kept at a uniform temperature of from 42 to 46°. If I recollect aright it was in December when I was there; and when we went into the cave all was as quiet as I ever knew a bee-cellar. No light was yet made, for he wished me to note the effect of the train on the bees, the same as it would be every time a train passed. Soon we began to feel a slight jar to the ground, and in a moment more the bees began to buzz, or show signs of being disturbed, which increased as the train neared; and as it went by, the trembling of the earth in this dark place was so great that it was any thing but

pleasant to me, and I did not wonder that the bees became so woke up that they came to the entrance of their hives and ran wildly about to see what the trouble was. He told me that this disquietude lasted them from ten to fifteen minutes after the passing of every train; while toward spring they did not get settled down between the passing of the trains. He never was successful in wintering bees in this place, and soon sold out and moved away. Since then I have thought I should prefer some other place for cellar wintering of bees besides one near a railroad.

WORKING QUALITIES OF BEES.

Another correspondent writes (p. 420, 1885) that he thinks that Italian bees work best on basswood and thistle; the blacks on raspberry and buckwheat, and wants my opinion in the matter. After the most close watching of these two varieties of bees during a period of ten years, up to three or four years ago I failed to find a single instance when, or a single plant or tree upon which, the blacks exceeded the Italians in the least as to honey-gathering, while at many times the Italians were actually making a gain while the others consumed their stores. For this reason I discarded the blacks entirely, since which, of course, I have had no opportunity to test them. To be sure I was right, I sent and got queens of the (said to be) *large brown* bees, and of the industrious gray bee; but a thorough trial of both only proved, as I expected, that each was not different from the black bee of our fathers' time. Next I tried the much-praised hybrids, produced by the famed breeder of *Apis Americana*, and found them not a whit ahead of the hybrids which I had had for years; at last, the profit made from my sales of honey from my Italians forced me to part with all other varieties of bees. I know that black bees will store more dark or buckwheat honey than the Italians; but my experience is, that, at the same time this is being done, the Italians are storing more white honey from red clover, whiteweed, and selendine, than the others get from buckwheat. When this white honey is not obtainable, then the Italians store of dark honey an equal amount with the blacks.

CRAMPING OF QUEENS.

When queens are caught by the wings they often double up and appear to have a cramp, the death of a queen having been recorded from this supposed cause (p. 532, 1885). For a long time I supposed this doubling up was caused by a real cramp; but after a little I learned what the trouble was. I caught a queen to clip her wings, when she doubled up as has been described. I thought to let her go as I had always done before when they had thus cramped, but I hesitated, as she was a shy body; and I had had several times of hunting for her before I found her. I soon concluded to clip her, even if she died, rather than hunt for her again; so I lowered my hands very close to the top of the frames and clipped off all the wings as I usually do. She lay on the top-bar of a frame, apparently lifeless, so it gave me a good opportunity to examine her closely, when I soon saw that she had one of her front feet tightly clamped in the opening from which the sting extrudes. In a moment more she began to kick about (as the bees hovered around her, so she saw she was in her own home), when the foot was loosed by the opening parting, and she crawled down among the bees unharmed. Since then I have closely watched scores of queens when thus

doubling up, only to witness the same operation. The queen struggles to get hold of something, so as to liberate herself if possible, and in these struggles curves her abdomen and partly thrusts out her sting. While in this shape one of the front feet catches hold of this apparently secure foothold, upon which the opening is closed from the sensation caused by the foot, holding the foot as in a vise, thus keeping the queen in her doubled-up condition as long as the foot is thus held. I have known queens to remain thus for several minutes, when not returned to the bees. The death reported must have resulted from the foot being stung accidentally while held in this shape. G. M. DOOLITTLE.

Borodino, N. Y., Jan. 1, 1887.

I should think it quite likely that a beecellar within six rods of the track might be objectionable, as you say; however, our bees are, the nearest or them, fifteen rods from the track, and are, of course, located out of doors; and as we have been exceedingly successful in wintering, we can not think a railroad at this distance is any detriment. There is, however, comparatively little travel on our road, and no lightning express trains, as you have on the great thoroughfares. I can imagine these would be more objectionable than the slow-running coal-trains that comprise the greater part of the business on our road.—Your experience with black bees compared with Italians is surprisingly like our own, although we have never tested the brown and gray bee, so much talked of in some localities. I have always been of the opinion, however, that they were common bees, and nothing else.—Your discovery of the cramping of queens is quite new; and until I verify it I can hardly believe it possible that the cases that have come under my observation were all caused in the way you suggest. The queens I have seen seemed absolutely dead, and doubled up exactly as if they had been stung. I have looked them over carefully, to see, if I could, any thing the matter; and when they finally straightened out and walked off, I have been tempted to think they were either frightened out of their little wits, or that they had been "playing possum." Hereafter we will all of us watch and try to verify.

FOUNDATION, VERSUS ITS NON OR LIMITED USE.

WINTERING BEES WITH AN EMPTY HIVE UNDER THE BROOD-NEST.

A COLONY that had been worked for extracted honey was found, in the early part of the winter of 1885, to have taken up winter-quarters in the upper story of the hive; and as they seemed to have plenty of honey I concluded to let them remain there. However, I carefully lifted the upper story and removed the frames from the lower story, that I might see how the bees would winter when so arranged. This was a single-walled hive with glass in the lower part, which gave an opportunity to see how matters went on. This colony came through in good condition, and kept the lead throughout the season. As the honey-season drew on, and the bees evinced a desire to build comb, the lower story was filled with frames having starters only of worker foundation. These frames

were soon filled with nice worker comb, and occupied with brood. The queen being kept busy filling the new combs with eggs, had left the upper story for the storage of honey. So energetically did this colony work under the stimulus of filling the space between the entrance and the upper combs, they were quite as far on at the first extracting as were other colonies that had been given a full set of combs to begin with.

MAKING BEES BUILD COMB BETWEEN THEIR BROOD AND THE ENTRANCE.

By this experiment I concluded that I had made two important discoveries—first, that bees are greatly stimulated and led on to the greatest degree of exertion and activity when induced to go into a "good big contract of comb-building," and that they will begin sooner and work more energetically when building comb to fill the intervening space between their brood-nest and the entrance, than to build comb above the brood-nest. Second, that when building comb beneath their brood, and with a view to extend that brood, they naturally incline to build less drone or store comb. That you may be satisfied with the desirability of this plan for securing nice all-worker combs, you would do well to test it by setting aside, the coming season, some colonies to build combs below, and others to build above their brood-nest. After the trial I think all of the fraternity would read the reports with interest.

HOW TO GET NEARLY ALL WORKER COMB WITHOUT USING FOUNDATION, ETC.

It is my opinion, that a clear gain of a full set of combs will be found, resulting from having the combs built below the brood-nest, with much less drone-comb and a less disposition to swarm. Of course, in any case less drone comb will be built where the queen is young and prolific. As I must have a full set of combs built for extracting purposes the coming season, and must have them worker comb, I "hedged" in my bees a little last summer and fall by superseding every queen I had over one year old.

WHAT TO DO WITH DRONE COMB WHEN BUILT IN THE BROOD-CHAMBER.

While this question of how to get rid of drone-comb building is before the "house," I want to relate an experience I had summer before last. A large swarm was hived on ten L. frames, no starters used. At the end of one week the frames were pretty well filled down with comb—one-third, or nearly so, drone or store comb. This was all cut out, and, a few days later, on examining I found the frames full and but little drone combs; but what had been built was again removed. Examining a few days later, I found nothing but worker comb in the hive. The drone comb thus obtained was then cut up and waxed into sections, put into a case, and given to the swarm for completion. They were soon finished—the finest lot of 40 one-pound sections I ever saw. Here we have an illustration of how to manage independently of foundation. For any who may have more money than time to invest in the business, I say, buy all the foundation you wish. I only mention this to show that those who will may get on as well without foundation as with it.

JOHN A. BUCHANAN.

Holliday's Cove, W. Va., Dec. 27, 1886.

Friend B., you have struck upon some very important points. First, having a large empty space beneath the brood-combs

for winter, on the plans recommended by Bingham, Doolittle, Boardman, and others; second, having bees build comb between the brood and the entrance. This is an idea that was strongly advocated by Gallup and Adair, as much as 15 years ago. It was given in connection with what they called the "New Idea" hive. Third and last, cutting out drone comb from the brood-nest, and putting in surplus boxes. Mr. W. B. House made a very large crop of comb honey by this means, some years ago. He took both drone and worker comb, however, as fast as the bees built it in the brood-chamber, cut out the pieces, and put it in surplus-boxes. The greatest objection to this course would be the trouble and time.

A BETTER RECORD FOR THE ITALIANS.

AVERAGE YIELD PER COLONY, 281 LBS.; LARGEST YIELD FROM ONE COLONY, 560 LBS.

ON page 977, GLEANINGS, 1886, Mr. E. France, after giving "The Record of Two Students" for the year just closed, concludes as follows: "It seems to me I hear you say, 'They must have been a strain of pure Italians, or some other fancy breed.' Well, they were a pure race of blacks, or brown bees, as you choose to call them—those fellows that some writers say live from hand to mouth—poor despised blacks. They are not so poor a bee after all. Who has got 49 colonies of any other race that has done any better (take a whole apiary through), not pick out 49 of the best?" Well, Mr. France, I have an apiary, not of 49, but of 41 colonies, that did much better than that of your student. They were about as pure Italians, too, as are to be found in this country, several of them containing imported queens. Here is the record: In April, 1883, I took 41 colonies in rotation, without selection as to strength, from my home apiary at Nauvoo, Ill., to a small prairie village five miles east of me. The spring was cold and backward, and the whole season unusually wet. No timber was within three miles. Some fruit and a few black-locusts were the only flowers they had to work on before white clover; and although the colonies were in good average condition, with a great plenty of stores, when removed I was compelled to feed them the last week in May and the first two weeks in June, to prevent starvation, one colony being almost starved before I discovered that they were short. But such a mass of bees! I never saw the like before, nor have I seen it since. The ten large Quinby frames were almost a solid mass of brood, and the hive and surplus box were overflowing with bees. The removal seems to have stimulated them to excessive breeding. The white-clover honey-flow began about the middle of June, and lasted all through July, followed by buckwheat and heart's-ease in August, and ending with Spanish needle, wild artichoke, goldenrod, etc., September 20. The total yield from the 41 colonies was 11,550 lbs. of extracted honey, or an average of 281 lbs. per colony. Greatest yield of any one colony, 560 lbs. I had no swarms—at least, none were seen. I followed the tiering-up plan, always being watchful that each colony had plenty of room for storing honey.

I began the season with 63 surplus boxes, with

frames full of empty comb. I ended the season with 95. I used full sheets of foundation built out in frames. My plan was, as soon as the first box was about half full, to raise it up and put an empty one under it. They continued to work mainly in the upper box; and when the combs were about three-fourths sealed we extracted them and placed the box with the extracted combs below again, next to the brood-chamber. During the first 24 days of July, each 14 colonies gave us one barrel of honey (550 lbs. net) every eight days. This apiary is located on the premises of Mr. William Thornbur, Powelton, Hancock Co., Ill. Mr. Thornbur received one-fifth of the honey as his share, for location, etc.

I have had large yields from some of my other apiaries, but none have ever equaled this one. I have had considerable experience with the Italians, the black (or brown), and the Cyprian bees, and I can truly say that I would not have either of the latter breeds as a gift, for the production of extracted honey, conditioned that I must not Italianize them, although I much prefer the Cyprians to the blacks. I find but one fault with the Cyprians—their unconquerable crossness. Were it not for this I should prefer them to the Italians, as I find the former equal to the latter in every other respect, and much more prolific—one of the best qualities of a profitable race of bees.

EMIL J. BAXTER.

Nauvoo, Ill.

Friend B., we are very much obliged to you for coming forward in defense of the Italians. Other circumstances, however, may have had something to do with your enormous product. Five hundred and sixty pounds from one colony, in one season, is one of the greatest reports ever put on record. The locality must be excellent, and the season was probably very favorable.

DOOLITTLE'S QUEEN-CELL PROTECTOR.

ALSO SOMETHING FROM AWAY OFF IN SOUTH AFRICA.

SOME months ago I wrote you a few items about bees and honey in this vicinity, and my own experience in changing from vicious hybrids to Italians. Before the work was finished, Mr. G. M. Doolittle gave us the description of his wire-cloth cell-protector, and that "Yankee notion" was worth more to me than the cost of your journal, for it settled three colonies that had previously destroyed queens and cells most provokingly. So much time was lost by rearing and introducing queens, when the honey-flow was best, that my increase was only from 13 to 20 colonies, and my honey-crop only twenty-seven gallons; but it seems that, in at least one part of the world, that passes for fabulous success. I reported it to a lady who was once a member of my household, but has been some years a missionary in Cape Colony. You may be interested in an extract from a reply received a few days ago:

"What a nice lot of honey to get from 13 stands! and that reminds me that we are reveling in honey just now. We had fine rains this spring, so the bees found plenty to work on, and the honey is very delicious. The honey-plant is evidently a variety of what we call candy-tuft. It grows in great profusion in the fields, springing up after every slight shower. The honey is whiter than our white-clover,

though I do not think it so fine in flavor. The bees are all native stock, and very vicious, I hear.

"The honey is taken in the good old way, killing two-thirds of the bees by smoking the 'gun,' and so stupefying the others that they hardly recover. I think nearly all to whom I have described our way of handling bees and honey have looked upon it as a *big errand*. I mentioned to some of my teachers last night the amount of honey you had taken, and described the operation of the extractor; but they seemed all to think it just an American yarn. If I had told them you had met a ghost in some of your wanderings they would have believed it. I rather think we shall have something to talk about when we meet."

It will reinforce this lady's reputation for veracity, and may possibly introduce your wares to a new and needy region, if you will send a copy of your catalogue, and a specimen number of GLEANINGS, to Miss T. M. Campbell, Rockland Seminary, Cradock, Cape Colony, British South Africa. I send you stamps enough to pay the postage, if the parcel does not exceed four ounces. DAVID STRANG.

Lincoln, Tenn., Dec. 30, 1886.

My good friend S., when you want us to send price lists or sample copies of GLEANINGS anywhere on the face of the earth, do not, we beg of you, take the trouble to send us stamps. We are just watching for chances to get GLEANINGS away off into the remotest corners of the earth, and it does not make any difference how many stamps it takes to get it there. We are very much pleased to get the good news from your friend, and we take the liberty of sending her GLEANINGS for a year; for, be it known to you and all other friends of the missionary work, that it has for years been our established custom to send GLEANINGS free of charge to any or all missionaries on the face of the earth, so long as they care to read it; so, give us the names of those among your friends who are laboring in missionary fields. We want modern bee culture taught wherever civilization extends. —In regard to the queen-cell protector, some time ago friend Doolittle mailed us a sample, and told us we were at liberty to make and sell as many as we pleased. The price will be 3 cents each; 15 cents for 10, or \$1.00 per 100. If wanted by mail, add 3 cents for 10, or 20 cents per 100 for postage. And in order to start on the right basis, I think we will place \$5.00 to friend Doolittle's credit for what he has done toward giving them to the public.

BEE LEGISLATION, AGAIN.

MRS. HARRISON'S VIEWS.

MR. EDITOR:—I am very sorry to see such a covetous and selfish spirit manifested among bee-keepers as to favor legislation that would deprive any one, so disposed, of the pleasure of keeping bees. They must be looking at the question from their own standpoint, and not from the other side. I well remember the time when I aspired to be a bee-keeper. There were two persons engaged in the business quite extensively, within the city limits, at that time. Both of them kindly assisted me in

every way. One came and divided my two colonies the first season, charging nothing for his services; he lent me books, and gave me sound advice. Honey at that time sold here for 30 and 35 cents per pound. By the time I was firmly established in the business, they were out of it. One of them was a doctor, and he couldn't buy the privilege of doctoring the city, and many frisky practitioners came here and boldly hung out their signs, so he folded his tent like an Arab, and staid away. His bees were scattered around the city, and soon they had emigrated west. The other man had a large lumber business, which increased to such an extent that his bees were neglected, and soon died out. At the present time there is no one person who has as many bees here as we have.

A very pleasant old German, whose beaming face reminds me of friend Muth, comes here occasionally to talk about bees. I asked him lately if he liked bees. His countenance lighted up as he replied, "Oh, yes! I like 'em." This man is too feeble to do heavy farm work; has abundant means, and keeps a few bees for the love of it.

An old lady of this city, past her threescore and ten, has a little apiary of six or eight colonies, and takes a great deal of pleasure in caring for them. An old man past fourscore has 25 or 30 colonies. Now, I can claim priority of location over these old people, but I don't want to take the cup of pleasure from their trembling hands. Brother Root, you would like to purchase the privilege of keeping all the bees in a certain district, and also wouldn't you like to sell all the bee-keepers' supplies in the United States? Thomas H. Newman could have done a big business in Chicago, in selling supplies, if it hadn't been for your mill in Ohio, and the cheap labor obtained there. Was there anybody raising peas, lettuce, beets, and cabbages, in Medina, before you? or selling kites or jack-knives? Would not your business be better if you could do all the selling in Medina or the United States?

I attended a bee-convention at Monmouth, Ill., where one of the members complained bitterly because some others, living four or five miles from town, brought their honey there, and injured his market. He said, "They might take it somewhere else." This same man brought honey to Peoria, and injured my market.

MRS. L. HARRISON.

Peoria, Ill.

Mrs. H., I fear you are a little uncharitable in your opening remarks, although I do feel a good deal as you do about the matter as you put it. I think, however, that all of us who know Dr. C. C. Miller know he is not looking at the matter from any selfish standpoint, but, on the contrary, is constantly considering the greatest good to the greatest number. You are mistaken, my friend—I do not want the privilege of selling all the bee-supplies in the United States. A great part of our business is fitting out supply-dealers with machinery and appliances, and we always invite them to look over our works, take dimensions of every thing, and we are glad to have them copy our plans. The saving of freight alone in making lives and section boxes is a very great argument in favor of having supply-dealers located at central points all over our country. We may be thoughtless in some of our remarks and suggestions, my

good friend, but I am sure we are not, many of us, so narrow-minded as the man who thought his neighbors might take *their* honey *somewhere else*.

THE BEE-KEEPERS' UNION.

FRIEND HEDDON'S IDEAS UPON THE SAME.

AFTER reading our highly respected sister Harrison's talk about the Bee-Keepers' Union, and your foot-notes on page 11, I, being the founder of the organization, or, perhaps, I might better say, originator of the same, and am now serving the second year as president of the same, and to-day, as ever, believe with Prof. Cook and many other intelligent and honest bee-keepers, that, if properly supported and managed, it will prove a great success and blessing, it may not displease you by my suggesting a few thoughts contrary to Mrs. Harrison's article. I believe that neither Mrs. Harrison nor yourself have looked at this question from the right standpoint. Ask yourself, first, Is bee-keeping, in the nature of things, a legitimate and useful business? Certainly you will say, "Yes." Now, admitting that we may follow it as a business, are we not entitled to the same rights, *vs.* the rights of others, that other lines of legitimate business are entitled to? A railroad cuts through a farm because it can not run under it nor afford to go around it. The odor of horse-stables is allowed to waft out upon the breeze, because it is impracticably expensive to absorb it in the barn, and horse-keeping is a legitimate business. When bees are kept so close to land not owned by the keeper that persons traversing that land are liable to be stung by the bees in defense of their hives, I hold that keeper responsible, because he can prosecute the business successfully without keeping such bees in such manner and in such places that any one need be stung by them in defense of their homes, unless the person stung is trespassing upon the land of the bee-keeper, in which case said person will be held by law and reason to abide by the consequences. I have surveyed the ground many times, and firmly believe that any rights less than those mapped out above will reduce our business to an uncertain "child's play," alike damaging to producers and consumers, and tending to keep us in constant litigation. For 13 years I kept from 16 to 180 colonies within 20 feet of our house, and the same distance from a neighbor's house, in the most thickly settled portion of the town, and in all that time no person, outside of the yard, was stung by one of my bees in defense of their homes. A small boy was stung in the foot by stepping on a bee at work while on white clover. This took place about 40 rods from the apiary. His father, a Jewish clothier, asked me if I ought not to remove the bees from the town. I told him that I might move them when he would move from his barn a stock of rat, mink, and skunk skins which he kept constantly in stock, and which were as constantly wafting their odor into our doors and windows, which were about 12 rods distant. He replied, "Oh! that's all right; I didn't expect you to remove your bees unless you *wanted* to."

You see, the reason why we are overreached in our natural rights is because the people attach no more dignity or importance to honey-producing

now than when the product was produced in fence-corners in "skeps," and was a dripping mixture of bee-bread and honey.

In my first letter upon the subject of our Union, anticipating its possible tendency to create trouble, I guarded against it by particularizing that any member asking aid of the Union must be able to show that no trouble was brewing at the time he became a member, it being the duty of directors to look into this matter in every case when asking the Union for aid. I believe this important feature has been omitted from the by-laws. With this added, and the already healthy arrangement that the Union shall not bear *all* of the expense (and, I should like to add, except where the defendant is poor), but about two-thirds of it, I think Mr. Newman tells us, I see no danger from any of the bad results depicted by Mrs. Harrison. The Union proposes to defend nothing but evident rights; and its board of directors, after carefully examining the law and the facts, will surely be able judges and honest exponents of the merits of the case. I feel that you, friend Root, are not saying as much in favor of our interests as simple justice warrants.

FRIEND MILLER'S LEGISLATION.

I have been opposing Dr. Miller's proposed "legislation for bee-keepers," through the *A. B. J.*, and I want to say that I agree with him fully in nearly every point he makes on page 17 of your last issue, except that I believe it can and will be brought about by the law of "the survival of the fittest," and in no other way. I know that the results of this natural law are sometimes not in harmony with our highest conception of right; but in this case I think they are, and that by it, is the best and only possible way to bring about the ends desired by friend Miller. Any way, he is to be congratulated for the candid, clear, and concise style in which he has vanquished his opponents. To my mind, he never wrote a better article for our journals. We have held convention after convention, and written essay after essay devoted exclusively to "getting on" in the *production* of honey, and now we begin to feel how poverty-stricken we are, regarding our knowledge and works which enable us to add financial success to that of successful producing. I trust that, before next swarming-time—in this latitude—we may hold a convention devoted exclusively to a few very important subjects, closely relating to our success, but not in the line of production. There is much else to look after.

THE HUTCHINSON PAMPHLET.

I have seen yours and friend Bass' call to friend Hutchinson to give us a pamphlet on the subject of the non-use of fdn. in brood-chambers, which is as important as it is original. Our hearty thanks and profoundest honors are due to friend H. for his work in this direction, which has been as diligent and successful as novel. Who among us can write a terser, more vigorous, or clearer treatise on this or any other apicultural subject, than friend H.? The addition of other subjects, with its consequent enlargement of the pamphlet, I am sure would be prized by us all. We have none too many books devoted to our chosen pursuit, particularly from such men as W. Z. H., who possesses in so high a degree successful, practical knowledge, and the ability to clearly impart it to others through the medium of the press. I am confident I should profit by it.

Dowagiac, Mich.

JAMES HEDDON.

WHAT TO DO, AND HOW TO BE HAPPY WHILE DOING IT.

Continued from Dec. 15.

CHAPTER XXXIII.

The pastures are clothed with flocks; the valleys also are covered over with corn; they shout for joy, they also sing.—PSALM 65: 13.

What a glorious promise, friends, is the little verse above! and how well it comes in with our talks through the previous chapters! But if we would receive these promises we must set about it and do our part, even though it be the middle of January, and in the depth of winter. The question is sometimes asked, what we can do in the winter time. A young friend is just now visiting me, who is greatly taken up with the idea of earning a livelihood for himself, wife, and a baby fifteen months old, on his farm of twelve and a half acres. He has just taken home with him a lot of books and papers to read: but from the talk I have had with him, I am afraid he is reading too much and working too little. I don't believe it is best for a farmer or gardener to spend much time in reading during daylight, in the winter time. As soon as it is light enough to see outdoors, we ought to be hard at work with brain and muscle at something, and do our reading before daylight in the morning or during the long winter evenings; and one of the things to be done is to look after the manure in the winter time; and this brings me to the subject of

PREPARING AND APPLYING MANURE.

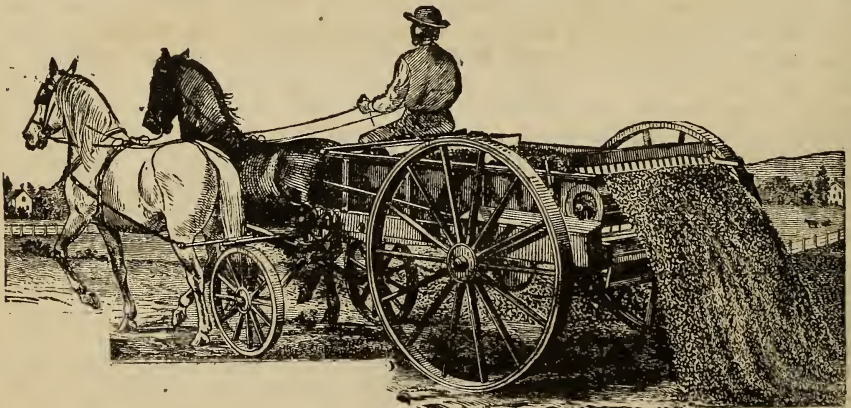
In Chapter XIX. we talked about different methods of procuring or making manure at home on the farm, or on our ten-acre farm, if you choose. Let us now consider the matter of getting our manure in shape to apply it to the ground, and of applying it. If your manure is piled up in a heap it will get hot, and burn itself up; and this must, under no circumstances, be allowed. It wants forking over and stirring up; in fact, it wants *breaking* up. In all of our books on gardening and farming, we hear this matter recommended over and over again. In the excellent little work entitled, "Gardening for Young and Old," by Joseph Harris (author of "Walks and Talks on the Farm," etc.), he goes over the matter again and again in his directions for producing almost every crop, and says that the manure must be pounded up and broken up before it is mixed in with the soil. I was especially struck with his directions for raising a nice crop of celery. First, we are to roll and plow and harrow, and roll and plow and harrow again, until the ground is light and

fine. Then you plow furrows, using the double-mold board plow, or, if you have not one, go down and back with a common plow, and then the manure is spread in these furrows. For celery, it needs to be old, thoroughly rotted manure. Then he says, "Spread it evenly, knock it to pieces with a hoe or potato-hook, mixing more or less soil with it, and get it at any rate well *broken to pieces*." We have tried the plan, and it certainly gives good results: but the labor of breaking the manure to pieces is rather expensive. As soon as we commenced at it I began to wonder if there was not some better way. I have suggested, in some former chapter, giving it to the pigs, and inducing them to root it over and break it up.

A few days ago I struck upon another plan for fining manure. We brought in quite a quantity and put it under the benches of the greenhouse, preparatory to filling our boxes for transplanting celery, cabbage-plants, etc. The manure was good, but it was in lumps and chunks; and as it was rather damp it was quite a task to break it up with rakes and sieves. Our brood of chickens that were raised to catch green flies in the greenhouse got too big for the purpose; and as they showed great dexterity in scratching whenever they were permitted to get on the lettuce-beds, I took the hint and confined them with wire-cloth poultry-netting under the benches. A little wheat scattered among it did the business. A hen and chickens can break up dirt or manure, probably better than any machine ever invented. As they oftentimes "work for nothing and board themselves," why not turn their wonderful talents in that direction into some useful channel? Our poultry-journals have had a good deal to say, and keep talking constantly to us, about providing employment for the fowls in winter. Gather forest-leaves, or provide cut straw; then scatter your grain among this and let them scratch it out. Now, it would cost me money to gather forest-leaves at this time of the year, and it would cost me money, also, to provide cut straw; but our manure-heap under the shed (pictured in Chapter XXXI.) is right handy to the poultry. They had been digging it over some, and I took down a rake, provided myself with corn and wheat-screenings, and

very soon had the grain scattered through the coarse manure. Why, it just made a "picnic" among the Brahmas that had been standing idle, first on one foot and then on the other; and this morning I heard a chorus of cackles that pretty surely indicates that eggs are not far in the future, even if it is only the first week in January. Now, friends, instead of being annoyed by the scratching of the poultry, can we not turn this scratching into a useful channel, so that the more scratching they do the more we feel happy? Terry tried to arrange his work, you remember, so that he felt happy when it rained on his potatoes; but if it did not rain, he felt happy because it gave him a chance to get in his clover. There may be other domestic animals that can be employed to break up, fine, turn over, and prevent from heating, our accumulations of manure-heaps, but I have not discovered them. While on the subject, I might add, that, if the manure from the poultry-house is placed on the manure-heap, and worked over in the way I have suggested; I think it will be the easiest method of applying it to our ground, and I think it will also do the most good. Now, although you may keep a very large flock of fowls, it is hardly probable that they can work *all* your manure up that is to be used on your grounds. Is there any thing in the way of machinery to do this work? In my former chapters I have several times alluded to the manure-spreader, but I have only now got ready to consider the machine fully. We give a picture of the latest improvements in this line, so far as I know, below.

up the manure by revolving so rapidly that it breaks and tears manure of any description, as the machine moves along. Instead of having a man to throw it off in forksful, without breaking it up, the machine throws it off, scatters it more evenly than could possibly be done by hand, and at the same time tears it to pieces and breaks it up fine, in a way that no sort of handwork could possibly do. The great objection to these machines has been their cost, which used to be from \$125 to \$150. They are now, however, reduced to about an even hundred, and that for the very best machines made, so far as I know. Notwithstanding the large price, the manufacturers who produce the machine shown above had, in 1884, sold nearly 1000 machines in different parts of the United States. They furnish a list of parties using them, so those who want to buy can ordinarily see the machines at work, without going a very great distance from home. Of course, it would not pay one to invest in such a machine unless he has a good many loads of manure to spread. Let us figure it this way: The interest on the money would ordinarily be \$6.00 a year. If the machine is carefully housed and properly used, it would probably last fifteen or twenty years, so you might say that the wear and tear of the machine would be perhaps as much more as the interest; therefore, unless the machine can be made to be worth ten or fifteen dollars a year, it would hardly pay to buy one. In view, however, of the fact that it puts all the manure on the ground in so much better shape than can be done without it, as well as in saving



MANURE-SPREADER AT WORK, BROADCASTING.

You will notice the cylinder, with spikes in its circumference, something like the cylinder of a thrashing-machine. This tears

of time, it might be best to make the purchase, even if the time saved does not amount to more than ten or twelve dollars

a year. I believe it takes about 20 or 30 minutes for a good stout man to scatter a load of manure. A spreader will do it as quick as a team can go from one end of the lot to the other. In fact, we have our heaps of manure at each end of the lot, so that we throw a load on at one end, drive across, load up again, go back, and so on. Our best authorities on market-gardening recommend from fifty to one hundred loads of manure per acre, every season: suppose, however, we say 25. A man with 10 acres of land to be manured each year would have 250 loads to spread. If the labor saved by the use of the spreader amounts to only 10 cts. a load, we should have \$25.00, and I think it would pay well, under the above circumstances, to purchase a spreader. In view, however, of the *better results* to be obtained, we might say it would pay with only

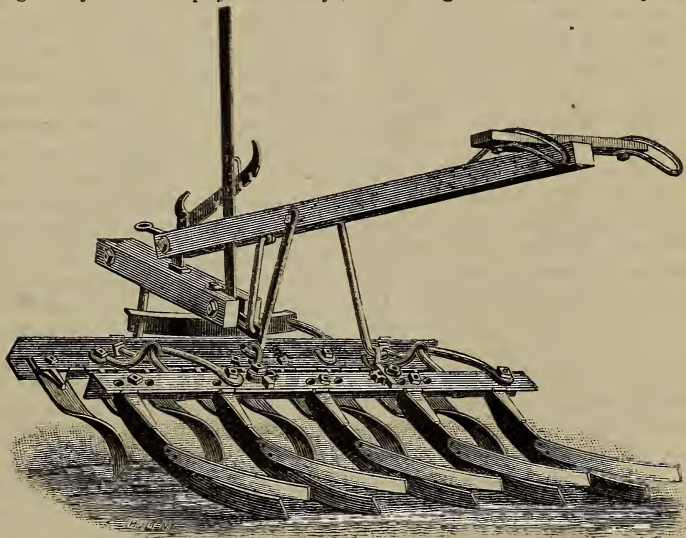
joining farmers had from 12 to 15. There is much manure hauled out and put in piles that is a waste.

C. H. McCULLOUGH.

Troy, Ohio, Nov. 23, 1886.

The point made in the above is, I think, an excellent one. I know that about all the leading authorities on agriculture are now recommending that manure be not put on the ground until either just before the crop is put in, or even *after* the seed is put in, as above; and some advise that half of the manure be put on at the time the crop is put in the ground, and the other half to be put between the rows when the crop is partly grown. Peter Henderson emphatically advises, in his recent writings, that the manure be finely spread on the top of the ground, after the ground is all properly fitted, instead of being plowed under.

The best machine for working the manure into the ground after it is spread by the ma-



THE ACME CULTIVATOR.

five acres to be manured every season. In regard to this latter point, I submit a letter from one of our Ohio men, that the manufacturers of the manure-spreader sent me some time ago:

Messrs. Kemp & Burpee Mfg. Co., Syracuse, N. Y.:—

I thought I would send you a line in regard to my manure-spreader. I have been using it about three years, hauling out from 200 to 300 loads per year, and have had no occasion for repairs of our own breaking. I have been hauling pure cow-dung today that we could not have spread off a wagon with forks. I would not take \$200 for mine and be without it. I can unload quicker than four men can load it. When I loan it out I charge \$1.00 per day for it. A word in regard to its use on my wheat ground. I sow my wheat, then go over it with the spreader, putting on about 15 loads to the acre. This year I had 27 bushels to the acre, while the ad-

nure-spreader, is the Acme harrow, described and illustrated in Chapter XXVI. Where the manure is spread over the ground after the crop is partly up, of course the full-sized Acme can not be used; but the manufacturers have lately brought out what they call the Acme cultivator, figured above.

This works the manure in beautifully, and is the best cultivator I have got hold of for breaking the crust on the ground, working it up fine, and leaving the ground level after it is passed over. We have used it during the past season, with the greatest satisfaction, between the rows of celery, until the plants were large enough to need a little earthing-up. A neighbor has also used it for cultivating corn; and although

he has a two-horse cultivator, he used this, saying it did the best work in the cornfield of any thing they ever had a horse hitched to.

I have said so much in favor of the manure-spreader, I will now mention its disadvantages, so far as I can, after having used it part of one season and the whole of another. First, it needs a good stout team to work it, especially if you have manure in solid hard chunks, or cow-manure, as mentioned above; and even with a good stout team it is not advisable to put on as heavy a load as the same team would ordinarily draw on a wagon. There may be some difference of opinion in regard to this matter, but we have tested it pretty thoroughly. We buy our manure all over the town, and buy it at so much a load; therefore it is desirable to get about as much as the horses can draw conveniently. Of course, we have a good team; but if we put on as much as the horses can draw, it is a pretty severe strain on the machinery. We at first tried tramping the manure down, but this will not answer, for two reasons: It gets too much weight on the machinery when the manure is heavy, and the strain is much more severe on the cylinder that picks it up. On a recent visit through adjoining counties I noticed that those using manure-spreaders drew their manure to the fields in wagons, and threw it down in heaps at each end of the field, as I have described. The machine was then set so as to spread a load in going once across.* This necessitates, of course, pitching the manure on to the ground, and then from the ground on to the spreader. I remonstrated at this, calling it a waste of time; but they told me I would find it a gain in the end, and our experience has proved them to be correct. To have the manure spread nicely and rapidly, it must not be packed in the spreader at all. Let it lie just as lightly as you can throw it in; and although you can work it when piled above the sides of the box, especially when the manure is very light, as a rule the stopping necessitated by so doing to run the box forward and pitch the manure back on to the empty space takes more time than to throw in just what will spread without stopping. Better follow the printed directions the manufacturers send out with the machines. We have had some repairs to pay for in consequence of trying methods of our own. Our friend in the letter above speaks of loaning

the machine to neighbors. It depends upon who the neighbors are. On one occasion a neighbor set his hired man at work with it, and it was run without oil until two of the wheels were cut so as to be worthless. It seems to me the better way would be to have the man, who is accustomed to work with the machine, go with it, for it is necessarily, in some respects, a rather complicated piece of machinery; and, as friend Terry says, it must be housed or it will prove to be an expensive piece of machinery.

SPREADING ASHES, LIME, PLASTER, SAWDUST, ETC., WITH A MANURE-SPREADER.

I believe it is generally agreed, that ashes are a benefit on almost any soil; but lime and plaster may be needed only in certain localities; but as they are used quite extensively in some places, I presume there is no question as to their utility. When I was a boy, riding a horse for cultivating corn, even to my boyish eyes there was a plain difference in the corn that had received a table-spoonful of plaster scattered on the hill, from that which had received none, and it was put on certain rows and not on others, so there could be no mistake about it. This was on sandy soil, however. I have never seen this tried on clay land. In regard to sawdust, there seems to be a great difference of opinion. I presume, however, the *kind* of sawdust has very much to do with it. Sawdust from hard wood, such as is found in many of our country sawmills, is, without doubt, valuable when it is old and well rotted. We frequently get such sawdust in our vicinity as has been so long in the ice-house that it needs replacing. Two years ago we were offered a lot of this kind for hauling it away. We put it around some of our strawberries for mulching. The plants thus mulched made a much better growth, and made larger fruit in great abundance; but as the sawdust was put around the plants by hand, the labor of putting it on cost more than the benefit accruing was worth—unless, indeed, the benefit shall continue for a number of years, which is not unlikely. When applied, the vines were covered with green fruit, and it was therefore necessary to hold up the fruit-stems and put the sawdust up under the foliage. The labor cost me about \$2.00 for covering only a few rods. Now, had this been done with a manure-spreader at the proper season, the whole would not have cost over 50 cents. It is well to look out about going into any speculation that is going to take such an amount of expensive handwork as the above. I did it, principally

*Where two teams are accessible, one may draw the manure to the lot, and pitch it directly from the wagon to the spreader, some extra piles being placed in advance on the ground, to keep the spreader going until the team gets back.

to satisfy myself as to the benefit of old rotten sawdust. On our stiff clay soils, this old sawdust seems to have a very beneficial effect; but I presume swamp muck would answer just as well, and may be better, for both of them are decayed vegetable matter. I have been under the impression that sawdust is particularly beneficial to raspberries and strawberries. Who has not noticed the exceedingly fine growth and fine fruit of the raspberry and strawberry, when growing near decayed stumps, or old rotten logs? Now, with the manure-spreader we can put on just as big a load of sawdust as we have a mind to, and the machine will spread it over the ground most beautifully, throwing it down between the foliage, and breaking up fine every lump there may be in it.* If your strawberries are put in rows the right distance apart, the manure-spreader can be run through them at almost any season of the year, to spread sawdust, muck, ashes, or even stable-manure; and if stable-manure can be thus spread among the plants, just before a good heavy shower, it seems to do more good than any other way in which I have applied it. The machine can be set so as to spread at three different rates of speed; and where you wish to put only a very thin sprinkling of lime, ashes, or plaster, over your ground, the quantity you have may be spread over a still larger area by having the box of the manure-spreader only half full or less. Let any one take a load of ashes, and try to spread it evenly by hand over a piece of ground, and then see the manure-spreader do it, and he will be satisfied of the merits of the machine.

Perhaps some of the friends may think it a little strange that I should say so much in praise of so expensive a piece of machinery for the simple purpose of spreading manure, and nothing else, in a book that is written purposely to tell those out of employment what to do. To which I reply, that people who own property are very often in want of something to do, as well as those who have nothing in this world. If I can suggest to a farmer or gardener a way of finding work on his own premises, instead of besieging our mills and factories for employment, I think I am doing him a service; and in no way that I know of can we succeed in mak-

ing a man so permanently happy and satisfied, as by encouraging or inducing him to find employment on his own premises. The enjoyment resulting from working the ground is in having good crops; and without plenty of good manure, properly applied to the soil, there can be no satisfactory returns. Some years ago the matter of getting honey from the gooseberry and currant was discussed in one of our bee-journals. One brother mentioned that the only time he ever saw bees gather honey and build comb in real earnest from gooseberry and currant blossoms was when he gave his whole currant-patch a tremendous manuring. His wife had been teasing for a lot of nice currants, and, to please her, he just covered the whole ground with manure. The bushes, of course, made a correspondingly luxuriant growth, and the year after they not only had currants by the bushel, but they had finer currants than any one ever saw or heard of before around there. Now, it is so with almost all kinds of fruit. It is not, however, the amount of manure which is put on, but it is the way it is applied. If you use your eyes carefully you can see how it is that plants take the manure and work it into luxuriant growth. The manure needs to be applied in such a way that, after a warm summer shower, the dark-colored liquid that comes from the manure shall go directly to the roots of the plants. Now, many of the roots are much nearer the surface of the ground than most people imagine. The roots of the strawberry and celery are close to the surface of the ground. Why, we know, without telling, that this dark-colored manure-water, seen on the surface of the ground around the plants after a heavy shower, will surely bring the rich dark-green leaves, pushing up and bursting forth so rapidly that they almost seem to move. The finest growth of celery I ever saw in my life was on a little piece of ground close to a line fence between myself and a neighbor. His manure was on higher ground than the celery-plants, and after a heavy rain the water ran down from the manure-heap all over my plants in such a way as to leave inky puddles for several rods. The celery was the last put out of the season, and it consisted of the remnants of a bed which I had not intended to make any use of. Before I knew it these plants had shot up so that they fell over and lay sprawling on the surface of the ground. We went at it and earthed them up in the most approved manner; but in a week they were sprawling around again. We banked

* If the sawdust is spread in the spring or fall, the strawberries will shoot right up through it, and it wouldn't do any hurt if the foliage and crowns were covered slightly, say half an inch or less; if, however, it is put on after growth has started in the spring, or while the plants are growing, the sawdust should be shaken off by gathering up the leaves and lifting them up to the light.

them as high as we could, and then set boards on top of the ridge, and banked them a foot higher. The celery was still growing when frost came, and the quality is so crisp that every bit of the plants is edible—there is no hard stalk about it. They are so crisp that, unless great care is exercised in handling it, it snaps up like pipe-stems. Now, then, to raise almost any kind of a plant, we want the ground underdrained and then worked up mellow and fine. Now work into the surface of this mellow ground a good lot of fine manure, put on just as the manure-spreader does it; then sow your seeds or set out your plants, and put on another thin covering of manure. If there should be a dry time after this last coat of manure is spread over the surface, there may be some of the manure lost by drying up—at least, some farmers think there is, but I do not feel sure of it. When a shower does come so as to wet the surface of the ground, there is manure enough to make the rain water look dark-colored; and this dark-colored water around the seeds and roots of the plants is what brings the crop. Manure plowed under may make a crop, it is true; but my opinion is, that it takes more, and does not act so quickly, as the plan given. A very little manure will color or darken a very large quantity of rain water. While I was attending the Ohio State Fair, one of my men discovered that a manure-heap was heating. He therefore turned the hose from the stables, near by, on the heap, and left it while he did something else. He let the water run rather longer than he intended, I presume. On my arrival home, the first thing I did was to take a look over the grounds. Imagine my surprise to see the water of the creek darkened as if somebody had been pouring coffee into it. I followed the coffee-colored streak at one side of the stream until it came to the outlet of an underdrain. Sure enough, the dark-colored liquid was slowly trickling from the tiles. I followed the drain until I came to the manure-heap, and, digging down into it, I saw that it was wet. I hunted up my man, but he insisted that

there could not have been water enough put on the heap to make any great waste. Now, very likely one load of *good* manure would color a stream of water for a mile; but my experience indicates that, whenever the water is colored so as to be perceptible to the eye, it will make plants grow. The question has often been asked, if the system of underdraining commonly in vogue does not in this way sometimes carry off the strength of the manure. I have watched the matter closely; and although I have seen it do it to some extent, after very heavy rains, I believe the loss is very small where the underdraining and spreading of the manure was done as it should be. If the underdrains are down fully three feet in depth, and your ground is worked up fine and soft before the manure is spread on the surface, this fine soft ground filters every thing valuable from the water before it reaches the underdrains. If, however, your manure is plowed under, so as to lie on the bottom of a hard furrow, and your underdrains are filled with hard lumps, of course the first rain carries the strength of the manure off to the roadside or to the outlet of your underdrain. This should be carefully guarded against; and the Acme harrow, such as I have described, and manure-spreader, are the things to do it.

In regard to the expense of these machines, you can test the matter for yourself. Make a bed in the garden, with a spading-fork and rake. Put on the manure with the wheelbarrow, and rake it in by hand. Measure the area you have worked, and see how much it costs per acre to do it. Now fit an acre with modern tools, and figure again the cost of team, interest on money invested in tools, and see which is the cheapest. I do not mean to discourage working with fork and rake; for small patches for early vegetables must oftentimes be got ready in this way; and the extra price received for the crop will pay for so doing. But just as soon as circumstances will permit, we should let horse-power take the place of hand-power—not only in getting the ground ready, but in spreading and working the manure.

CHAPTER XXXIV.

Whosoever shall exalt himself shall be abased; and he that shall humble himself shall be exalted.—
MATT. 23: 12.

Thus far in our book our talk has been principally about "What to Do," and but little has been said about the latter part of the title—"How to be Happy," etc. I think our happiness, to a great extent, depends

upon our surroundings. We are also happy when our plans succeed. Most of us are planning and working with busy brain. Even during the night time we lay out our work and contrive ways and means to ac-

comply certain results. If, when we come to put this in practice, and the result equals or exceeds our expectations, we, as a rule, feel happy over it. I have seen a great many young people made unhappy by putting their expectations too high, and I have been through a good deal of this experience myself. I have always been in the habit of working more or less with tools. But one sad thing about my work, and one source of great unhappiness, has been that I planned too much in rainbow colors. Especially was this the case when I was a boy. I would decide to build some implement or some piece of furniture; and as I was short of means I concluded to do the work myself. When the article was finished it almost invariably took more time and money than I had figured on, and, with few exceptions, it did not work as well, nor look as well, as I had pictured it in my imagination. A good many times it had to be abandoned, and it was often laid aside, or allowed to stay where I last used it, an eyesore and a cause of unhappiness every time my eye rested upon it. I remember one day, when father and I were planting corn. I had seen a hand corn-planter, and I told him I thought I could make one. He objected, on the ground that my machines didn't work, and that I would be wasting nails and lumber. I told him, however, that if it did not work I would pay for the lumber, and I would draw the nails all out and put them back in their places. Under these conditions he consented. It did not work, and, with a sad heart, I pulled it to pieces, put the nails away, and cleared every thing up out of sight, as if no corn-planter had ever been made. It was a useful lesson to me. The next time I wanted to indulge my inventive faculties I remembered the corn-planter, and was saved some unhappiness by not going into it. About this time I began to discover I was not a good mechanic—at least, that I was not a good carpenter and joiner. The principal reason was, I never took time to do my work nicely, and this oftentimes occasioned failure. Besides, where a machine succeeded it looked so unsightly that I was ashamed to have it seen. I concluded to have my line of work, and work at it; and when I wanted to have carpenter work or blacksmith work done, get a carpenter or blacksmith to do it. I find the same disposition among many of the young friends who are at work here. A young man thought he could make a corn-marker; his employer told him he could not—he had not had the experience. But the boy

had quite an opinion of his mechanical abilities, and so he went to work without permission. It took him three times as long as it would have taken an experienced man, and it kept giving out in one place and then another until it was quite a source of unhappiness all round. The young man who has charge of our greenhouse has become quite skillful in making seeds and plants grow, but he makes terribly poor work when he attempts to put up shelves or benches. I have had hard work to convince him that he is not a good carpenter; and, furthermore, that it would not pay him to learn to do good carpenter work. I told him I was quite satisfied that he could, by serving an apprenticeship, learn to do nice carpenter work, and do it quickly; but as he had chosen to work with seeds and plants, he could earn much more money by sticking to his business than to try to put up shelves and benches. One of his fellow-workmen, who receives the same pay he does, would do the work nicely and quickly, without any showing or educating. Now, although I most heartily advise having a shop and some carpenter tools on every farm, or around every home. I think it quite important to beware of undertaking work you can not do profitably. If a farmer or gardener has spare time during the winter, or during evenings, he may practice using carpenter tools; but when he has something else to do in his own line of work, for which he can earn wages enough to pay a carpenter or blacksmith, I would say, "By all means do it."

I have now given you some sources of unhappiness, the moral to which would be this: If you want to be happy, and enjoy your work, be careful about putting your expectations too high. If you have attempted a good many things, and failed, let these failures teach you a lesson; and the lesson is, that you do not *overrate* your own *abilities*. I have now in mind a very good person, whose life has almost been made a failure because he constantly insists that he is capable of directing others how to do work; but the truth is, he has never first proved his ability, by making a success in small things. The fact that his life has been a series of failures does not seem to have taught him humility at all. In contrast with his disposition I remember a young man who asked me for work; and when the subject of wages came up he said, "Mr. Root, give me exactly what *you* think I am worth, and I shall be happy and satisfied." He is now receiving a thousand dollars a year. I do not mean to say

that this plan will answer under all circumstances; but in this case it has always kept a very pleasant feeling between himself and myself. Instead of complaining that he does not get what he deserves, or that he does not get credit for all he has done, he is constantly striving to see how good a record, or showing, he can make each year, and that record, or showing, pleads for him. The action takes the place of words. He has never said, "Mr. Root, don't you think I am earning a little more than you pay me?" But the *results* of his efforts with brain and muscle often say to me, "Mr. Root, that man is doing splendidly, and it begins to look as if he is really worth more money than he is receiving."

Right in line with this talk is one of the greatest sources of happiness. You may build air-castles in your own mind, my young friends, but do not tell them out loud, and do not get your expectations up too high. The young relative of whom I spoke in a former chapter is going to try poultry on his 12½ acres. He said he believed he could make every hen earn him a *dollar a year*. I think he is putting his expectations too high. I should much rather have him give an accurate statement of what he *has* done with hens, than to hear him tell what he is *going* to do. He has an excellent locality for fowls, and he can easily make a nice room for them in the side of a gravelly hill adjoining his barn and stables. One of the poultry-journals states that it will cost 10 cents a month to keep a hen, where you are so situated as to be obliged to buy every thing. If you raise it, it will cost pretty nearly as much: that is, what you raise ought to be worth the market price. If he keeps only about 50 fowls on an average, they will probably get their own living on his 12½ acres, six months in the year. This will reduce the expense to 60 cts. If they lay 100 eggs apiece in a year, I think they will do pretty well; and I think he will do pretty well if he makes his hens pay a clear profit of 50 cts. each. If he makes this his estimate, and then does *still better*, he will enjoy keeping poultry. If, however, he fixes his figures at a dollar each, clear profit, and gets only 50 cts., he may feel somewhat like grumbling; and if his poultry should cost him more cash right out than he gets back in a year, there can't be very much happiness of any kind about it.

Now, boys, in view of this, don't set your

figures too high. Make up your mind to put in an earnest, hard day's work every day in the year, with brain and muscle, and then decide to thank God, the great Giver of all good, for whatever he gives you. In these remarks I would not think of discouraging a young man from trying his hand with tools—especially, *simple* tools belonging to almost any trade or industry: but I would discourage the habit of having a great lot of tools about him that he can not use enough to pay the interest on the money: and especially would I dissuade him from thinking he is smart enough to do any thing that *any* mechanic can do, with his years of experience and skill. One of the rising sins of Young America is a disposition to think he is smart enough to earn good wages at almost any calling, without learning a trade. Almost every day, nice-looking young men are coming to me, begging for a place. Sometimes I ask them if they have any trade, or what they have been accustomed to work at. The reply comes, almost every time, "I have not worked at any thing but odd jobs: but I guess I can do almost any thing you want done." We are just now in want of a printer: but I have not asked any of these young men if they could set type. I am quite sure they would think they could, and no doubt they would go to work without a bit of trouble, provided I would pay them 10 or 12 cts. an hour while they are learning how, and they would think they ought to have this, even if it took an expensive and skilled man to teach them, and even though they were a good deal more trouble than they were worth.

Do you see where we are tending, friends? Thousands upon thousands are wanting something to do, and yet, when wanted they do not know how to do it. Do you ask what I advise right here? I advise you to do exactly as the boy did who is now earning a thousand dollars a year; yes, even though you do not earn enough to pay your board, for you had better work for nothing and board yourself than to remain idle. If you can't get a chance to do even that, get some type, and go to work at home by yourself. Take good, well-printed books for your guide: and when you can do some nice printing, take a sample of it to some printing-office, and tell them you have got far enough to do work like your specimen. I think you will soon find a place where you can get *every cent you are worth*,

To be continued Feb. 15, 1887.

natural honey-sealing was complete. If the glass was not roughened a little, the wax was liable to leave it after a little while, but the wax edge and the paper never parted after they had once met. It is possible your correspondent, Dr. Mason, may have read some description of this plan, which I fancy was described in the *British Bee Journal*.

J. A. ABBOTT.

Beeton, Ontario, Can., Dec. 29, 1886.

A FEW MORE POINTERS ON INTRODUCING.

There are a few points about introducing queens that Ernest did not give in connection with this subject in a late issue of *GLEANINGS*, which I should like to know. 1. Is it best to introduce a queen, that has had a trip in the mails, immediately on her arrival, or wait a few hours, or until the next day? 2. If you wish to exchange queens in a hive, do you put in the new one at the time of taking the old one out, or do you prefer to leave them queenless awhile? If so, how long? 3. Do you put the attendant bees in with the new queen always?

A. A. FRADENBURG.

Port Washington, O., Dec. 23, 1886.

1. Put the queen, immediately after her arrival, directly into the hive. In fact, I think it will be much better than to wait awhile, as you suggest.

2. Very frequently we take out and cage a queen, and introduce another one in her place, at one and the same time. We once thought it better to allow the hive to remain queenless before caging another queen; but by the Peet process of introducing we have lately found no trouble in introducing a queen at once. We keep only Italians, and I am not sure you could do this with hybrids, Syrians, or Cyprians.

3. If you find attendant bees in a Peet cage, as you probably will in a great majority of cases, cage them and the queen together on the comb. I do not know that it will make any difference to us whether the queen is caged on a comb, with or without attendant bees.—Right here I will say to our readers, if any of you have a desire to ask questions on some topics connected with our own apiary, on which I have not fully enlarged, be free to write us, and your questions will be answered either in *GLEANINGS* or by private letter. ERNEST.

THE PRINCIPLE OF THE ALLEY TRAP NOT NEW.

Alley's drone-trap may work very well, but it is not new. I do not know who invented the first drone-trap; but in the year 1866 were different drone-traps in Germany in the market. I bought one of them in 1867 from G. Dathe, Eystrup, Germany. This trap was constructed on the same principle as the Alley trap. It had two different chambers—the first one, in connection with the alighting-hole, had a series of holes large enough for the worker-bees, but too small for the drones. A prolonged canal opened into the second chamber, made of wire screen, through which no drones, but worker-bees, could pass. This canal is for the same purpose as the wire cones of Alley's trap, but it was closed by a small piece of light cotton stuff which easily opened into the second chamber, but closed the entrance to the first one.

This wire screen could exclude the drones, but the queen could not be excluded with certainty. The screen was not exact enough, and the wires

did not stay in place all the time. About 1876 was the perforated zinc in use in Germany; and since that time drone-traps were made out of perforated zinc. The idea of catching a queen is not new either. W. Vogel, *Bienenzeitung*, 1880, p. 46, talks about one, but only in a short way.

Selma, Texas, Dec. 3, 1886. L. STACHELHAUSEN.

A LETTER FROM SCOTLAND; HEATHER HONEY.

We don't have so severe winters or warm summers as you have, neither have we such large yields of honey; but for all that we have managed to raise enough to bring it to one-third the price it was 4 years ago. At that time white-clover honey in 1-lb. sections brought 30 to 34 cents; now it scarcely sells at all. There is some inquiry for heather honey. I do not know whether you have any heather in America or not. I never saw it even mentioned in *GLEANINGS*. It is very dark in color, not so beautiful as clover honey; neither, to my taste, is it as fine. R. ALLEN.

Overtown, Dyce, Aberdeenshire, Scotland.

REPORT IN RHYME.

I have sat down, in order to fix
Out my report for 1886,
I began in the fall of '85
With all my colonies only five.
I got all things ready, I trust,
And packed them away in good sawdust
All around, just up to the eaves,
And filled the crates with forest-leaves.
So I fed them up very strong,
For you know the winter is quite long.
So I gave them an abundance of feed
To keep them from coming to want or need.
I waited till the elm and maple bloomed,
And other early flowers, with their perfume,
Were with sweetness filling the land,
Before I set them on their summer stand.
Which, after I did it was truly alarming,
How soon they got ready for swarming.
About the time I was planting my corn
I wrote to a bee-man, Thomas Horn,
For a pure-blooded Italian queen,
And received as fine as ever was seen.
So I worked every day like a man,
But I at once adopted the Heddon plan:
For on having no after-swarm I was bent,
I say it will work all right and prevent:
For each colony increased but one,
And to take their honey was only fun.
For just as sure as I'm alive,
They made surplus pounds 285.
But I had nearly forgotten to tell
I reared several queens to sell,
And I have now fully realized
What it is to have my bees Italianized.
They do not always appear to be so cross;
But just you come up and be boss.
They will let you take from them their store
Without stinging, and go cheerfully after more.
Thus any person can plainly see,
For honey and gentleness they are the bee.
That every lover of bees should keep,
Who wishes to produce good honey cheap.
I weighed the stores of all my bees with care,
And found they had plenty and to spare.
On such stores I think they will thrive,
And all come out in the spring alive.
So, now, to you I must all confess
To whom I owe so much success,
Doollittle, Heddon, Chaddock; and A. I. Root,
Though named last, does not stand foot—
Of Hutchinson, C. C. Miller, and all the rest,
I can not say who is best.
But I have read Root's work, his A B C,
All the way from A to Z,
And *GLEANINGS* is the thing for me
To study while working with the honey-bee.
So I have all my bees packed again this year,
And will end my story right here.
So I will build a happy good-night,
Until spring reveals my prospects to light.

Pearson, Ohio. E. B. HAUGHEY, 5-10.

HOW HIS WORSHIP, THE TOAD, WAS STUNG.

Two neighbors (brothers), formerly neighbors and scholars of Dr. Dzierzon, old bee-keepers, relate the following, to which they were eye-witness: A large toad, which they had often seen among their hives, came one afternoon out of his retreat, a small marshy place behind their apiary. He stopped in front of a hive, catching some incoming bees, when all at once he got stung on his tongue, which swelled up so quick that he could not with-

draw it, but hung swelled out of its mouth, looking very comical. He withdrew, not to be seen again. You know taxidermists skin and stuff toads sometimes. Although they have a thick skin, the moment you put a little common salt on their back they become very sensitive. F. J. M. OTTO.

Sandusky, O., Nov. 6, 1886.

FOUR COLONIES DEAD ALREADY; WHAT KILLED THEM?

Out of 18 colonies, 4 are now dead, they dying during this cold spell. The weather was only twice below zero, the first morning 1°; and the morning after, 9°. My bees are all in single-walled hives. All have honey enough. We had about 6 in. of snow. I didn't remove the snow from the entrances. When I discovered that they were dead I opened two of them. I found them clustered naturally, also all the cells in the cluster full of bees. It looked to me as though they were killed instantly, without warning or time to change position. They had honey in their sacks, so you see they didn't starve. According to Dec. 1st GLEANINGS they didn't smother on account of snow. I haven't meddled with them since cool weather began. I can't find any other bees dead in the neighborhood. I wish to know what killed them so early in the season. I may lose all I have before spring, if somebody doesn't tell me what to do. F. P. HISH.

Henton, Shelby Co., Ill., Dec. 9, 1886.

Friend H., it is very unusual for bees to die in the manner you describe, especially if they had sealed stores all round the cluster. The fact that you found honey in their sacks, is not sufficient. When bees get so nearly out of stores that they have nothing but unsealed honey, and cells containing some honey and some pollen, they often die something in the way you describe. There needs to be plenty of good sealed stores on all sides of the cluster, so that every inmate of the hive can have access to it easily. I do not know that I ever saw a colony die under the above circumstances, unless it was where the stores were evidently of so poor a quality that dysentery set in. It may be, however, that your bees gathered something poisonous; but I should hardly think you would find them dead as you describe, even then. I do not know how to suggest any remedy for such a state of affairs in the winter time.

A NEW HONEY-PLANT.

I inclose a package of sweet-melissa seed. See description of same by T. J. Burrill, in *A. B. J.*, Oct. 13, 1886, page 651. My bees, the past season, worked from morning till night on melissa growing by the side of spider-plants, only occasionally gathering honey from the latter. In hot dry weather they worked lively on melissa in preference to all other flowers, of which we have quite a large variety. If my bees do not work better on spider-plants next season than they did this I shall raise no more for them.

Carpenter's square, or figwort, which grows in small timber near the creek, is more attractive to them.

Melissa imparts a citron-like flavor to honey, which our people consider delicious. I have grown melissa since 1881, but have kept bees only two years, commencing with one colony as an experiment. I increased to 15 good stands with about 50

lbs. of honey to each hive, excepting three, which have fully 100 lbs. each.

I have not lost a colony yet, and I winter them in a cellar which is not very warm. I have had applications for seeds, from different portions of the U. S. and Canada. I believe there is nothing better; and if it succeeds as well in every locality as here, I shall be amply repaid for my trouble in introducing it. Please give the seed a fair trial, and report to me in due season. A. C. TYRREL.

Madison, Neb., Dec. 4, 1886.

CLASS LEGISLATION.

God made man,
And man loves money.
God made bees,
And bees eat honey.
God made the earth,
The earth raises flowers;
We do not produce them,
So they are not ours.
The products of the mine,
The land, and the sea,
Should all to God's children
For ever be free
To take and use as they may have need,
Leaving the rest their brothers to feed.

The iron, the copper,
The coal, and the zinc,
Are the gift of his hand;
But who, do you think,
Would allow you to dig some,
In case you should wish
To make you a fire,
A shovel, or dish?

Now, Brother Miller,
Pray tell, if you can,
Why for God's gifts
We pay tribute to man.
What is this that we hear
About class legislation,
Contention, and strife,
All over this nation—

About cutdowns and lockouts,
Boycotts, and strikes,
Gould and Vanderbilt,
Russell Sage, and the like?
What makes those be called
The kings of the nation?
Echo says what,
If not class legislation?

Michigan City, Ind., Jan. 3, 1887. W. W. MALBY.

FROZEN BROOD.

I am satisfied that there is more than one phase of foul brood as described in the convention at Indianapolis. I have had brood die in the cell, and dry up, and it created a stench almost unbearable. Still, I gave those dead-brood combs to strong colonies of bees, and they cleaned them up and all went along nicely. No more foul brood there. I am satisfied that it was not foul brood as you have it, but some at the convention described it as foul brood in the dry state. I never saw foul brood in the pus form, as you gave the description at the Indianapolis convention, and also others. I have been troubled three times this way each time in the spring, after a hard cold winter. I claim it is frozen brood, and nothing else.

Martinsville, Ill.

WM. ST. MARTZ.

HIGH VERSUS THE LOW PRICE OF HONEY.

I have just read Dadant's article about the sale of honey, page 981. The trouble is, that the people who eat honey do not find it cheap. I sometimes buy honey, as my own bees are some distance in the country. I have always had to pay, at least 20 cents per lb. I am inclined to think, that, if people who like honey could get it for 10 cents per lb. or less, the consumption would be doubled or trebled. I speak of Cincinnati prices. I live there.

THOMAS HUNT.

Conway Springs, Kan., Dec. 21, 1886.



Every boy or girl, under 15 years of age, who writes a letter for this department, CONTAINING SOME VALUABLE FACT, NOT GENERALLY KNOWN ON BEES OR OTHER MATTERS, will receive one of David Cook's excellent five-cent Sunday-school books. Many of these books contain the same matter that you find in Sunday-school books costing from \$1.00 to \$1.50. If you have had one or more books, give us the names that we may not send the same twice. We have now in stock six different books, as follows; viz.: *Sheer Off, The Giant-Killer, The Roby Family, Rescued from Egypt, and Ten Nights in a Bar-Room. We have also Our Homes, Part I., and Our Homes, Part II.* Besides the above books, you may have a photograph of our old house apary, taken a great many years ago. In it is a picture of myself, Blue Eyes, and Caddy, and a glimpse of Ernest. We have also some pretty little colored pictures of birds, fruits, flowers, etc., suitable for framing. You can have your choice of any one of the above pictures or books for every letter that gives us some valuable piece of information.

CONDUCTED BY ERNEST R. ROOT.

THE BOYS' AMATEUR BEE-HIVE FACTORY.

I BELIEVE I have not told you yet much about Jimmie's playmate, Sam. The two boys, as you may guess, were fast friends. Their likes and dislikes were much the same. They both were of a mechanical turn of mind—at least you would think so if you were to take a look at Mr. Green's barn and fences—little toy windmills here and there, which they had made with their knives. Besides, these they whittled, out of blocks of wood, boats that they were wont to sail in a tub of water. Such waves as those boats would stand! The boy who made a craft which would stand the most sea (tub-waves) was the best fellow. Then there was a great variety of other things which they made, such as only the genius of a boy can evolve, aided by his inseparable, ever-ready companion, a *jack-knife*.

Mr. Green, noticing the bent of their minds, and desiring to encourage it as well as to put it to some profitable use, entered into a contract with old Santa Claus. The terms of said contract, as drawn up by the lover of little boys and girls, ran in this wise:

—OFFICE OF—
SANTA CLAUS.

DEALER IN

—*PRESENTS*FOR*BOYS*&*GIRLS.*—

Terms strictly Cash.

N. Y., Dec. 10, 1886.

For the sum of \$6.50, received, I agree to deliver in the morning of Dec. 25, 1 A. M., at the respective homes of each of the boys Samuel Green and James Brown, a chest of tools, said chest to contain a complete assortment of the best tools.

(Signed) Santa Claus.

Old Santa, even if he is old, you see writes plainly enough, even yet, for boys and girls to read. Jimmie's parents were too poor to enter into any such contract with Santa Claus in favor of their son. Sam's father, however, thought he could afford a chest for his neighbor's son, both as a reward for regular attendance at Sunday-school, and because Jimmie was a boon companion of his own son.

I need hardly add, that the contract was duly fulfilled at the day and hour, and that the boys were rejoiced—"Just what we wanted," they said.

"Where shall we have our shop?" said they, on Christmas morning when they had got together. "Oh! I know," said Sam; "our old barn-loft will be just the thing."

Thither the boys repaired, lugging along their chests of tools. The loft had been used for the storage of stray pieces of lumber, stove-pipes, boots, etc. On their arrival they found cobwebs and a general litter. Spurred by the thought of what a grand place this would be for a shop, the boys soon had it cleaned up,—rubbish thrown out, and the pieces of boards packed neatly away.

When Jimmie was putting the last board upon the pile in the corner, he exclaimed,

"My! what's yer pa goin' to do with all them boards? Did he say you might have 'em?"

"He hasn't said any thing about them yet. They were some that were left from the corn-crib, and we put them up here about a year ago. I'll go and see if we can have them."

So saying, Sam clambered down the ladder just in time to see his father, who was just starting for town.

"Say, pa, did you have any particular use for those boards in the barn-loft?"

"I declare, I had forgotten about those boards. If Santa Claus did not say so, I believe he intended that they should be the property of you boys," said Mr. Green, with a twinkle in his eyes that Sam understood. Sam needed no further hint, but hastened back to the loft.

"Did yer pa say we might have 'em?"

"He did not say so in just so many words, but—"

"Good!" exclaimed Jimmie, who took in the situation. "Won't we just have a picnic? We'll make carts and windmills—big ones I mean: by cracky! yes, and bee-hives!"

During the early part of the afternoon, with Mr. Green's assistance, the boys made a work-bench. When it was finished it was discovered that they had no vise.

I tell you, boys, said Mr. Green, at the Home of the Honey-Bees, Medina, Ohio, they sell a very pretty little implement of this description for only 15 cents. But how can you get the money to purchase each of you a vise? I have a pile of wood which you can put in the wood-shed, nights and mornings, after school. If you will pile it all nicely in the shed I will advance you the money now, and you can send for the vises to-day.

"Let's do it now, and have the job off our hands," said Jimmie.

"We shall hardly have time," said Sam.

"Oh, yes! both of us can do it if we work a little after dark. It's only 3 o'clock."

Sam looked at the pile of wood with some misgivings. He "never *did* like piling up wood."

When, however, Jimmie commenced to load up with an armful, Sam followed his example. Ere long the pile diminished very appreciably. When it came supper time, the boys were both loath to give up the job. They thought it "just fun." Sam could not tell just why he enjoyed it. After supper the boys worked more energetically than ever, meantime talking and planning what things they would make and do, whether they could make bee-hives, etc. As it grew dark soon, they worked by—the light of a lantern which Sam's sister had thoughtfully hung up. When the work was done, nothing would do but those boys must send for the vises before they went to bed. Sam's mother produced writing-materials; stamps were inclosed, and the order sent.

To be continued.

JUVENILE LETTER-BOX.

"A chiel's amang ye takin' notes;
An' faith, he'll prent it."

THE KITE, AND HOW IT FLIES.

The kite you sent, we think a beauty. It came safely. Mr. Mace put it together for me, and helped me to sail it. It went up like a thing of life.

CORA BLANCHARD.

Mt. Hope, Morris Co., N. J., Nov. 30, 1886.

HIVES MADE BY HORSE-POWER.

I am a little girl. Pa had 9 swarms this spring, and they increased to 15 this summer. He got about 550 lbs. of honey. Pa has a shop where he saws his lumber out, and makes his bee-hives. He runs the machinery with the horse.

LIZZIE J. DOTERRER.

Newtown Mills, Forest Co., Pa., Dec. 14, 1886.

A HIVE WITH GLASS ON THE BACK, AND WHAT THE SUN DID.

My father gave me a hive of bees, if I would watch his bees, and hive them when they came out. There was a piece of glass on the back of my hive, and the sun shone through and melted two of the combs down. Papa took the honey out, and the bees built it up again. Next year I will put the hive in the shade.

BENJ. F. STOUT.

A QUEEN'S HEAD THE WRONG WAY IN THE CELL.

My pa had 45 stands of bees, and I have one. Pa did not get much honey last season. The bees are in good condition for winter. Pa and I were looking at the bees, and we found some queen cells, and pa did not want them, so I pulled off one of them, and the queen's head was turned the wrong way.

EUGENE WILLIS.

Jonah, Texas, Nov. 26, 1886.

AN ITALIAN QUEEN FIVE YEARS OLD.

Pa has between 50 and 60 colonies of bees. They have been doing very well this summer. He had an Italian queen which was five years old. Last spring she died. I read GLEANINGS, and find it

very interesting. We keep the Brown Leghorn chickens. We find they are good layers. I have a pet pigeon named Charley Boy.

Cold Spring, Ky.

LILLIE LURKER.

EDWARD'S SWARM OF BEES.

One day I was going out to work, and I saw a swarm of bees. They were on a maple-tree, and father gave it to me. He said if I would take care of it I could have all the honey that they would make. I got about a quart of honey. It was a small swarm, and that is why I did not get much honey. I have them in the cellar now. I am going to try to do better next year.

EDWARD STOUT.

Brighton, Iowa, Dec. 27, 1886.

SAWING OFF A LIMB ON WHICH WAS CLUSTERED A SWARM OF BEES; RESULTS.

I am a boy 11 years old. My pa keeps bees. As he works in Vienna I have to tend to the bees. We live on a farm. The bees nearly stung me to death last summer. The bees swarmed and settled in the top of an apple-tree, and I climbed the tree and sawed off the limb, and the bees got after me and ran me through the cornfield. I have lots of fun skating.

FRED BELLEMEY.

Vienna, Ill., Dec. 28, 1886.

Yours is not the first instance we have had of the unpleasant results of sawing off a limb holding a swarm of bees. Always be careful about jarring the limb while sawing; and when the limb is nearly off, let it down easily with a pitch-fork, or, better still if you can, reach it with your hands.

COLD WATER FOR STINGS, ETC.

My pa's bees are in the cellar. He built a stone wall around his bee-cellar last summer, and made a cement floor. I wish I could come and see Huber, and blow the whistle too. Ma reads the letters to me, and I want to hear some more about Jimmy and Ted. When I step on a bee, I put my foot in water. One day last summer a bee stung me in my face; and when I told ma I was stung she said, "Well, run and put your foot in water;" and then I told her it was my face.

CHARLIE PALMER.

Hart, Oceana Co., Mich., Nov. 29, 1886.

Yes, if you come to Medina we will give you a chance to blow that big whistle.—Cold water for stings, I know, makes the place affected feel better, but I am not sure but that you would get along about as fast if you did nothing.—I haven't seen Ted for some little time. I suspect that Jimmie, although I haven't heard him say, does not care to have Ted tag him into their new shop.

SWARMING, AND WHAT THE BOYS DID.

One day when my brother came in from the field for dinner we were sitting on the well-bed, and my brother walked around toward the bees, and he hallooed out, "Oh! the bees are swarming! I was bareheaded, and my father was working in the tile-factory. I jumped up and ran all the way to the tile-factory and told my father. I started right back and ran all the way, and my father came, and then they began to settle in the garden on the peas and on the ground. Father took the smoker and drove them into the hive which he had set close by. It was very hot, and we cut some bushes and laid them on the hive to keep the sun off, and they stayed in the hive.

WILLIE HUNT, age 12.

Dodson, Montgomery Co., O., Dec. 21, 1886.

A LITTLE GIRL TELLS HOW SHE PERFORMED THE
FEAT OF TAKING A SWARM FROM THE
"TOPEST" BRANCH OF A TREE.

In spring my father had 19 colonies, and increased to 49. He sold one this fall. They are all in good condition. He has them mostly in chaff hives. We sold over 600 lbs. of honey. I help pa sometimes when the bees swarm, and when he takes the honey from them. I hived but one swarm this summer, and that was on Sunday, when pa wasn't at home. The swarm got on the "top-est" stem of the highest tree. I did not know what to do. I called my sister. There was a wagon standing below. I climbed up the tree and sawed off the stem. The bees all fell on the tongue of the wagon. After I got down the tree we stood the hive beside the tongue and brushed the bees in the hive. We got them in nicely, but I got stung, and my sister too. I was stung "pretty" many times, but not as many as my sister. Her face swelled so hard that she didn't see any more in one eye.

DINA BLUNIER, age 13.

Roanoke, Ill., Dec. 23, 1886.

You certainly performed quite a feat in getting a swarm from the highest tree. I wonder how many boys could have done it. You deserve a chromo for that; and if your father didn't give you that swarm I think he ought to have done so. I will tell one of the clerks to pick out a large panel chromo and send it.

THE BEE, AND WHAT IT IS.

The bee is a very busy creature. There are two kinds of bees—the black and Italians. They put the bees in hives, and when the hives get so full of bees they will swarm, and sometimes they will swarm twice a year. We had a hive of bees, and other bees came and took all their honey. I and papa saw a bee in a tree, and I got stung on my lip. It swelled up one inch. The bees make honey in summer, and they live on honey in winter. Some folks have two dozen hives of bees. The bee honey is good. When I was down at my grandma's I got as sick as a dog on honey. The bee has a stinger. I ought to know, for I got stung with them. I don't know how many times I got stung. I could not tell or count how many times. The bee has six legs and two wings. The bee has two eyes. I don't know what the colors are of the eyes. Its back is yellow; not all the back either. At the end of the stinger it is black. I don't know where they carry the honey. CHESTER TURNER.

Brookville, Ohio.

Your notes on the bee are not all of them correct, but I suppose enough so for all practical purposes for the little folks. It would be hard to tell just what is the color of a bee's eye. Through a microscope they look as clear as crystal, but without any microscope they look brown. Perhaps you know that those big eyes are compound. For a fuller talk to the little folks on this subject, I would refer you to p. 42, in the year 1885.

THE FOLLY OF STANDING IN THE WAY OF FLYING
BEES.

Papa has 12 colonies of bees. In the winter time he puts on an outside shell, much larger than the hive, and fills the cavity between that and the hive with sawdust or dry chaff.

I will tell you something that happened once

which seemed funny to me, but I presume it did not seem so to papa at the time. There was a storm came up, and the bees hurried home, angry as could be at being interrupted at their work. Papa happened to be standing in their way, and they all rushed up on him and stung him badly.

Frankfort, Mich.

LORA MARBLE, age 11.

It is not wise to stand in front of the entrance, or where you would be liable to obstruct the flight of the bees. A coming storm will start the bees home in great droves, but I hardly think the bees you speak of were angry because the storm interrupted them, but because your papa stood right in the way. When I am in a great hurry to get on the train it makes me clear out of patience to have some great big heedless man block the only passage to the car-steps.

WORKING WITH BEES AFTER DARK, BY MEANS
OF A DARK-LANTERN.

Tell Ernest to try one of those dark-lanterns for working with bees after night. They are the best. I hold one for pa when he works with his bees after night, and the bees don't fly after it. It is so bright it hurts their eyes. I help pa find the queens. He has 100 stands of bees. We have two carp-ponds. The little fish will eat out of my hand. I have two nice big cats that catch the mice in the bee-yard for pa.

ANNIE M. HAINES.

Moons, O., Jan. 5, 1886.

Why, Annie, you have given us quite a valuable item as to the value of a dark-lantern. I can imagine nothing nicer, when working with bees after dark, than to have a bright little girl "shoot" the rays of light from the bull's-eye lantern right on the combs, or wherever else it may be needed. I will try it the coming season, and try to report on it. I will tell the clerks to send you a panel chromo.

THE BEARS AND THE HONEY.

I inclose a piece of poetry which I copied from one of papa's books, "A Grammar of Six Different Languages." I think we had better not do as the bears did.

As two young bears in wanton mood,
Forth issuing from a neighboring wood,
Came where the industrious bees had stored
In artful cells their luscious hoard.
O'erjoyed they seized with eager haste,
Luxurious on their rich repast.
Alarmed at this, the little crew
About their ears, vindictive flew.
The beasts, unable to sustain
The unequal combat, quit the plain.
Half blind with rage, and mad with pain,
Their native shelter they regain.
There sit, and now disreeter grown,
Too late their rashness they bemoan:
And this by dear experience gain.
That pleasure's ever bought with pain.
So when the golden baits of vice
Are placed before our longing eyes,
With greedy haste we snatch our fill
And swallow down the latent ill.
But when experience opens our eyes,
Away the fancied pleasure flies,
It flies—but oh! too late we find
It leaves a real sting behind.

Sonora, Ohio.

BERTHA JONES, age 11.

Thank you, Bertha; your little selection of poetry is real good. There are too many of us—yes, and little boys and girls, who behave ourselves very much like the two young bears. But we folks don't always profit by our experience, bitter and full of stings though it may be.

TOBACCO COLUMN.

SOMETHING FROM THE ST. LOUIS JOURNAL OF AGRICULTURE ON THE TOBACCO QUESTION.

FRIEND ROOT:—I don't know whether I am taking a liberty in thus familiarly addressing you; but the good turns you have unconsciously done me in furnishing in GLEANINGS the bee-lore I have found so necessary to my purposes have certainly constituted you my friend. I write a brief line to commend your good work in fighting the use of tobacco. I was very much struck with the facts related in the Dec. 15th No., by T. B. Terry (the picture of whom, by the way, is a good one, though a little too solemn-looking); certainly the considerations offered by Mr. Terry ought to be sufficient to induce every married man, if not every man, to give up the tobacco habit. But, unfortunately, to give up the confirmed use of tobacco is a most difficult thing to do. It is true, that I had the nerve to do so, some thirteen years ago, when I found that the use of it was exceedingly disagreeable to my then sweetheart, now my wife. But I think it must have been easier for me to do than for most people. I have known men to make honest endeavors to give up tobacco, and suffer so much that they concluded that the use of it was the lesser evil.

Now, since this is the truth, that the tobacco habit once formed is one that is exceedingly difficult to break, ought we not all to make a greater effort by individual precept as well as example to discourage the use of it by children? Mr. Terry's suggestion, to have a national law, is hardly feasible however desirable. There is but little disposition to enact sumptuary laws, whether relating to tobacco or whisky; but if every father of boys did all he could personally to prevent the tobacco habit being formed by his sons before they become of age, it is hardly likely that, on arriving at years of discretion, they would begin it. As for myself, I have tried to impress upon my big boy that it is a wretchedly poor specimen of manhood that requires to be bolstered up by either smoking or chewing. That, of course, is the temptation to boys. The boy's greatest ambition is to be a man, and appear manly. In his ignorance he is apt to mistake for manly things the swagger and loudness and disgusting habits of roughs and bullies, especially if any of these habits are indorsed by the example of his own father. Let us all do what we can to teach boys that the best and most courageous manliness is that which is founded on virtue, not on vice.

The case of fatal poisoning by tobacco, mentioned by Mr. Terry, is terrible, but no such extreme case ought to be necessary to make every man who has a decent consideration for others to leave off a disgusting practice. As disgusting as is to me the nicotine-laden breath of men with whom I have only business relations, how much more have I thought would mine be to my wife and my little daughter, when they offer the kisses of affection from their clean, sweet lips! There has been no time in my more than twelve years of married life when I thought the solace offered by tobacco could be worth the one-hundredth part of such evidences of affection; and since I should very surely refuse to kiss my wife or daughter if she used tobacco, I should find no justification for expecting

any thing else from them if I did. As a fighter against tobacco and whisky, you may count me a member of your band always.

St. Louis, Mo., Dec. 20, 1886. GEO. B. MORTON.

Many thanks, brother, for your hearty coöperation in this work that lies before us; and may we hope to find every now and then a similar stirring exhortation in your own journal. And, by the way, why can't you and other brothers of the press start in your own journals something like this?

"Any reader of the *Journal of Agriculture* who will give up tobacco because of what has appeared in these pages in regard to the matter, may have the journal one year free, he to give us a written promise to pay us for the journal whenever he shall yield to the temptation, and touch tobacco again in any form."

The letters from those who give it up are to be published as fast as received, for the encouragement of others. The objection has been made, that this is hiring people to do right; but the amount in question is so small it is usually taken more as a piece of pleasantry, and it seems to have the effect of appealing in just the right way to get a good many to get up and shake themselves, and start out in something they have for years known ought to be done. As the resolution and promise come out in a public journal, it is pretty well published and understood in any neighborhood, and few men will care to be seen using tobacco after they have in this public way announced the determination to give it up. It is like giving testimony in prayer-meeting—it strengthens and encourages others all along the line.

I have stopped smoking, and will promise you not to do so again. If you will send me one of your smokers, and I commence using the weed again, I will send you the price of it.

Phila., Pa., Oct. 18, 1886. JOS. B. CREAGER.

I see in GLEANINGS that you said any one who quits the use of tobacco would receive a smoker. Please send me one; and if I use tobacco again I will pay you for the same. MATTIE SCHEIERN.

Wayland, Mich., Oct. 11, 1886.

CLEARs HIS CONSCIENCE.

I have broken my pledge. I quit using tobacco on bees, but still smoke once in a while. When I came to rake up my conscience I found that I owe you 50 cts. for the smoker you sent, although it was worn out long ago. You sent it with other goods. J. T. FLETCHER.

Clarion, Pa.

HAS USED THE WEED ALL HIS LIFE.

I have been using tobacco in various forms all my life until the past six months. I have now abandoned the weed altogether. Seeing your offer in GLEANINGS, I write to know if I am entitled to a smoker. I am very willing to pay the price of the smoker should I ever use tobacco again. I have 5 stands of bees. E. B. JOHNSON.

Manatee, Fla., Nov. 18, 1886.

OUR HOMES.

And if any man will sue thee at the law, and take away thy coat, let him have thy cloak also. And whosoever shall compel thee to go a mile, go with him twain.—MATT. 5: 40, 41.

LAST Sunday afternoon I found another added to my class in our county jail. He was a stout, ruddy-faced young man perhaps twenty years of age. His face flushed when I spoke to him, and I saw that he was quite bashful; but in a little time we got to talking like old friends. Robert's story was something like this: He came from England about two years ago, and had been traveling about here and there, trying to find work wherever it was to be found. His last job was on the railroad; and on account of reducing the number of hands in winter, he was thrown out of work, and had been vainly trying to find something to do in one of our neighboring towns. A few evenings ago, the man with whom he boards came home somewhat intoxicated. He seemed to be in a quarrelsome, fault-finding mood, and, among other things, he inquired of his wife where Robert was. She told him Robert had gone somewhere to help somebody deliver some goods. He then inquired if Robert had found any work yet; and when told he had not, he broke out with something like the following:

"Well, he is a lazy, good-for-nothing shiftless fellow. He certainly could get work if he half tried."

More remarks followed, not very complimentary to Robert. Now, the truth was, Robert had come home unknown to the folks, and was at that time in bed; but as only a thin board partition separated him from the family, he heard every word that had been spoken, and up he jumped and confronted the man who was speaking ill of him behind his back. I presume some hard and loud words ensued; and finally the intoxicated man drew a pistol. At this, Robert put his hands on the man's shoulder and pushed him away. This gave an opportunity of making a plea of assault and battery, and the boarding-house keeper went for a constable. The constable at once told him he was intoxicated, and refused to make any arrest. The man then went to another officer of the law, who was not quite so particular, and Robert was arrested, and called upon to pay a fine of \$6.40. Robert had not any money, so he could not pay it, and that is why I found him in jail that Sunday afternoon. You may perhaps notice that the above statement is Robert's story for it. I have not heard the other side at all, and, in fact, we do not care any thing about the other side just now. When I find these boys in jail, I endeavor to get the full facts in the case, so far as I can, from their own lips, and then I endeavor to show them that, according to Bible teaching, they are condemned by their own words. Robert claimed, as almost all do who get into jail, that he was entirely innocent, and had done nothing. When I had questioned him fully on all the points of the case, I began talking with him somewhat as follows:

"Robert, why did you not stay in bed,

since you had once retired in good order, and thus have saved all this trouble and expense?"

"Why, Mr. Root, do you suppose a man is going to keep still in bed when he hears somebody calling him a good-for-nothing shiftless fellow, and going on in that way behind his back?"

"To be sure, I do expect a man to do just that very thing, Robert."

By this time my fingers were on the Bible, and I opened to the fifth chapter of Matthew, and read:

But I say unto you, Love your enemies; bless them that curse you, and do good to them that hate you.

Again I read:

But whosoever shall smite thee on the right cheek, turn to him the other also.

Robert previously said that he was a member of the Church of England before he came over to America, and therefore I expected to have him at least respect these words of the Savior, that seemed so especially calculated to help us to keep from getting into quarrels or dissensions. To my surprise, however, he promptly rejected all such teachings, saying, "If that is Bible, I don't want any of it around me."

I appealed to one of the other inmates, with whom I had had many long talks, and I expected, of course, he would say that the best thing Robert could have done was to have kept still and let it go. I turned to him. "Mr. Brant, if you heard somebody talking about you in the way Robert has mentioned, after you had retired for the night, would you not have kept still and let it all pass?"

"To be sure, I would not, Mr. Root. I would get up and teach him manners."

"Even if it resulted in bringing you to jail?" suggested I.

"Yes, even if it brought me to jail. I don't allow any man to abuse me when I am around to hear it."

I labored with them long and earnestly. I even went so far as to tell them I feared they would be in jail all their lives; but they decided they would take the jail, rather than submit to being "run over," as they termed it. Finally, however, I *did* succeed in getting them to admit, that, if a man *could* submit to be snubbed and abused, without saying a word back, or doing any thing, it would probably save trouble in the general machinery of human life.

"But, Robert," said I, "after the decision had been made, that you were to pay \$6.40 for laying your hands on a man before he touched you, why did you not pay it and have it done with?"

"Why, Mr. Root, I have already told you that I hadn't any money. You know I have not had any work all winter."

"But, it is a sad thing to get into jail, and have it hanging over you all your life afterward. Had you not an overcoat or watch, or something you could leave with some friend in order to keep you from going to jail?"

He finally admitted that he had a watch, and that it was worth \$6.40 a good many times over; but when crowded, he replied,—

"But, Mr. Root, *I was not guilty*. There was no assault and battery about it, and I won't pay it, and that is the long and the short of it."

I looked at my Bible quickly and read the following:

If any man will sue thee at the law, and take away thy coat, let him have thy cloak also; and whosoever shall compel thee to go with him a mile, go with him twain.

Robert said, as before, that he did not propose to come down to any such course of action. He fairly and squarely, when pressed, rejected the words of the Savior. This, in fact, was exactly what I wished him to do; or, in other words, I wished to have him *confess* that the reason why he was brought to jail was because he rejected Christ; and in rejecting Christ he had rejected and *defied* the laws of our land.

In presenting the subject to others as I have presented it to you, dear friends, I have been pained and startled to hear so many decide that Robert had done right—that is, if the facts were exactly as he stated them. I am afraid people are thoughtless, many times, in deliberately deciding to refuse to obey our laws. When I told the story at the noon service, and submitted the question to those gathered there, those who answered first, every one of them, thought that Robert did right in refusing to pay the fine imposed upon him. After a little more thought and reflection, finally several suggested that it was better to pay the fine than to go to jail, even though the fine was unjust, and the party innocent.

We now come to the point of considering the laws of our land. No doubt they are imperfect, and, many times, through false representations of evil men, the fines imposed are unjust; shall we therefore refuse to abide by the decision of the law? God forbid! Perhaps I have, at different times in my life, counseled disobedience to the law; but I am beginning to think I made a mistake. Are we not, dear friends, in danger of arraying ourselves with rebels and anarchists when we thoughtlessly counsel disobedience to the laws we have? I told the boys I would have paid the fine, even if I had had nothing to do with the matter whatever, but that I would have done it under protest, and so informed the officers, and declare I would have redress, if it were possible to do so; but that, for the sake of preserving the majesty of the law, I would submit to whatever it might decree. I think, dear friends, this is safe and sound doctrine.

I did not tell Robert at the time, that I felt quite certain, if his life had been just what it ought to be, he would not have been fined nor taken to jail, but I asked him if he had been in the habit of attending church while here in America. He admitted that he had not very much. I asked him if it was not true that he was sometimes in the habit of drinking intoxicants, as well as the man he boarded with. He admitted that he was in the habit of drinking beer; and although I may be mistaken, his face seemed to indicate that he was given, at least somewhat, to such habits.

Now I want to say to the young friends who may be reading this, that there is very

little danger that any of them will ever get into trouble such as I have described, if they are in the habit of associating with Christian people, attending church, Sunday-school, and the young people's prayer-meetings, wherever they happen to be located, and deporting themselves in a decent and respectable way, such as young Christians are almost sure to do. When I asked Robert if he could not get \$6.40 to save him from jail, he said he had no friends at all. It seems to me a young man is at fault in having no friends, even if he has lived only one winter in a certain locality. In our town there are good men and women—yes, young men and young ladies, who make it their business to look up strangers, and invite them to our meetings, and who try to call them in wisdom's ways. The trouble is, I fear, that those who complain that they have no friends are seeking ways of darkness rather than light.

Now a word to those who are not in jail and not in trouble; that is, not any such trouble as Robert has found. Yes, and I think I may ask for a word to professors of religion, and those who are members of our churches. Have you faithfully followed the words the Savior gave us in our opening text, in your own walks and life? If an enemy should undertake to sue us at the law, and take away a coat, what would be our attitude? How many of us are there who would be willing to give the cloak also, for the sake of peace, unless, indeed, our attention had been called to it by these words? Of course, I do not refer, nor do I think our Savior meant to have reference to highway robbers, such as I spoke to you about in our last issue; but these words were spoken to a class of people who were for the most part, at least, *friends* and *neighbors*—those who had permanent places of abode, and were considered respectable citizens. Why should such go to law? Why should we have *difficulties* and hard feelings with our friends and neighbors? Why should we waste time and money enough on some little unimportant matter to have bought a dozen coats, before the thought even occurred to us of letting the cloak go too, for the sake of peace? If we are compelled to go a mile out of our way to do somebody a service, are we not more apt to grumble than we are to show a readiness to go *two* miles? The Savior's injunctions seem to be to the effect that, if we are to be his followers, it is our duty to do a little *more* than just what we agree to do, or a little more than what we are in duty and justice bound to do. Sometimes I am told that a man would never get along in the world if he should undertake to get a living in that way; but such replies have always made me feel sad. Those who have read GLEANINGS a good many years, especially those real good friends who have been sending me such good kind cheering words during the past few weeks, know that I have tested these teachings just a little. Occasionally, when the spirit seems to be on me, I have done a little *more* than I was asked to do. I have given smokers to those who have stopped using tobacco, etc. Now, of course, you know I do not say this boastingly; but I mention it because I wish to prove to you

that a man will not get *poor* in following Christ's teachings. I have been many times surprised *myself* to see how quickly these things swing around and shape themselves. The one who follows Christ's teachings, and who tries to do it in the real spirit in which Christ gave it, seems to have *strange streaks of luck*, as it were. It hits people a little unexpectedly; and by some strange law that is past divining by our feeble intellects, the evil spirit is driven away—the enemy is disarmed, and hostilities are at an end. You just try it some time when you get into a discussion in regard to a small matter about the justice of a thing. When you see your opponent is honest, but mistaken, good-naturedly give up to him, or give him twice what he asks, if necessary, for peace and harmony. If he insists on your going a mile out of your way, say, "Why, yes, my friend, come to think of it, I will go *two* miles. I do it gladly, too, because it is according to the Savior's teachings." A certain class may laugh at you, and call you a fool. They may tell you that, if you undertake to go through life following out that plan, you will get into the poorhouse, and such like talk. But I tell you, you will not do any thing of the kind. There is a text in the fortieth chapter of Isaiah, that hits the point. It reads thus:

But they that wait upon the Lord shall renew their strength; they shall mount up with wings as eagles; they shall run, and not be weary; and they shall walk and not faint.

OUR OWN APIARY.

CONDUCTED BY ERNEST R. ROOT.

POSITIONS WHEN AT WORK OVER HIVES.

DID you, dear reader, ever have the back-ache when at work over the hives, lifting heavy combs, in a position somewhat cramped? Did you not sometimes indulge in a good stretch of the body to its fullest height? I have wished once or twice that the hives were on stilts, so that I could work at the hives when standing erect. If I remember correctly, W. Z. Hutchinson, when I visited him, did have his nucleus hives elevated. Our readers will also remember that some years ago we illustrated Dr. O. M. Blanton's apiary. A notable feature about it was that his hives stood on stilts. I believe, however, the majority of the bee-keepers prefer to have their hives on the ground, for reasons which I will not take space to enumerate here.

I sometimes examine, or "go through," 150 colonies per day. To accomplish the work as easily as possible, and at the same time relieve myself of the tedium of one posture when at work over the hive, I have recourse to a frequent change of position. The one I usually prefer is the one illustrated on page 31, last issue. Perhaps you think that such a seat as a hive-cover would hardly be stable enough. Just as much, and more so, than the ordinary milk-stool. You will see, by referring back to the cut, that it permits of an erect posture of the back. When it is desirable to get at or lift out a frame on the

outside of the hive, an inclination of the body, together with the hive-cover, puts the operator within easy reach of said frame. As far as possible, I aim to avoid any curving of the back, or the stooping-over of the shoulders. The inclination of the hive-cover one way or the other, as you will see, regulates the distance to any desired frame without the necessity of bending the back. A regular tool-box, or stool of four legs, will not permit this rocking motion, as you will notice.

When I feel as if I should like a change of posture I kneel in the soft grass (if not wet), my knees almost touching the side of the hive. After I have taken out a frame I drop back on my heels, if I desire to examine the frame for any length of time. About half the hives in our apiary are chaff hives. I can work over these best in a standing posture. As the chaff hive is two stories high, it is rather inconvenient to work with it while sitting or kneeling. However, I do sometimes sit on the edge of a chaff-hive cover; but as the rims of the latter are made of only $\frac{3}{4}$ stuff, I generally stand.

Perhaps some one of my readers will say, "I can't afford to sit down when at work among my bees." I reply, that it depends upon what kind of work in the apiary you are doing. If you are running for honey, then I think I can agree with you for the most part; but if your apiary is devoted to queen-rearing, as is ours, then it becomes necessary to spend some little time over a hive; as, for instance, hunting for a virgin queen, cutting out choice queen-cells, etc. In any event, we ought to avoid curving the back any more than is necessary, whether sitting or standing. I believe the instruction of the writing-teacher to his pupil, to "hold the body erect," is equally applicable to the bee-keeper engaged in rearing queens.

HOW TO HANDLE FRAMES.

To look at one side and then the other of a comb, becomes almost a necessity in queen-rearing. To revolve by the corners a frame full of honey, requires some little strength of the wrists—that is, if the top-bar as the axis of revolution remain horizontal. By turning the top-bar to the perpendicular, the frame may then be easily revolved. I throw out this hint for the benefit of beginners. The veteran bee-keeper will in all probability have acquired the knack intuitively from his long experience. The engraving on page 31 shows the operator in the act of revolving the frame. He is hunting for a queen which had been introduced a few days before. Having loosened the cage, wherein the queen was confined before the bees gnawed to her, he has thrown it upon the ground, which striking with some little force has jarred out a few bees that always collect inside. The bees thus shaken up take wing and return to the hive. Desirous of noting how well the queen has laid, he is in the act of revolving the frame, as I have before described, that he may see whether the queen has filled the other side of the comb with eggs also.

OUR OWN APIARY AT THIS DATE.

At this writing we have had a week or ten days of steady cold weather, the mercury

dropping frequently to zero, and several times six or eight degrees below. If this weather continues much longer I am fearful of the results among our bees. As I stated in Nov. 1st GLEANINGS, I did not then entertain a very hopeful view of the situation—foul brood having reduced our bees. If we had colonies instead of nuclei, I should have no serious apprehensions, even if the weather did continue to be cold.

REPORTS ENCOURAGING.

FROM 68 TO 96, AND 2400 LBS. OF HONEY.

I COMMENCED the season with 68 stands; increased to 96, and took 2400 lbs. of comb honey, nearly all white, which is a trifle over 35 lbs. per colony. This encourages me, as I see Doolittle did no better than I. They are all packed on their summer stands, with nearly one-half under the snow, out of sight, where I shall let them remain, as I know from experience that they are all right, for they drift under in the same way each winter, and always come out as bright as a dollar.

M. T. WILLIAMSON.

Covert, N. Y.

A GOOD REPORT FROM ONE OF THE PIONEERS.

I have sold over 11,000 lbs. of box honey from 80 hives last spring.

GAIN R. SMITH.

Victor, N. Y., Nov. 29, 1886.

108 GALLONS OF HONEY FROM 20 COLONIES.

I have 20 stands of bees, all in good condition. I did very well last summer. This summer I secured 108 gallons of extracted honey.

ALBERT CARTER.
Carrollton, Mo., Dec. 11, 1886.

AVERAGE OF 190 LBS. PER COLONY.

My bees gave me an average, this season, of 190 lbs. each, spring count; had no increase; the best season for honey I ever had, and I could have done better had I been prepared for the honey-flow.

Carbondale, Pa. J. RUTHERFORD.

600 LBS. FROM 15 COLONIES.

I have had a pretty good harvest of honey—about 600 lbs., in pound boxes, from 15 hives. I took 98 lbs. from one swarm, and it swarmed 3 times this summer. I increased them to 40 swarms. Inclosed find one dollar for GLEANINGS. I have found that the money expended for it has been a profitable investment.

JACOB RICHARD.

Elmwood, Ill., Jan. 4, 1887.

HYBRIDS AHEAD.

I began the season with 8 colonies, increased to 21, and took 945 lbs. of comb honey. My bees are mostly hybrids, and they gather almost 2 lbs. of honey to the Italians one. I have one hive of the yellowest bees I ever saw, and they gather almost nothing in the sections, although they will fill a brood-frame quicker than any other bees I have.

Stark, Mich., Dec. 15, 1886. BENJ. PASSAGE, 8-21.

FROM ONE TO FIVE, AND OVER 350 LBS. OF HONEY.

My first swarm was pure Italians, purchased July 17, 1885. They gathered enough for winter stores, and I wintered them in a chaff hive of my own make after your pattern. They came out in fine condition in the spring. This season I increas-

ed them from one to five, by dividing, and one natural swarm, which came out late in September. The surplus stores amounted to from 350 to 400 lbs., besides leaving 10 full frames of honey in the lower stories, and 8 lbs. in the upper story, all in chaff hives.

FRANK FERRIS.

Mt. Clemens, Mich.

FROM 125 TO 208, AND 13,000 LBS. OF COMB HONEY.

My report for 1886 is as follows: I began the season with 125 colonies in fair condition; increased by natural swarming to 208, and have taken in all, 13,000 lbs. of comb honey, all in 1 and 2 lb. sections. The past season has been one of the best I have known in my 14 years' experience in the business.

Cambridge, Ill.

J. V. CALDWELL, 125-208.

AN AVERAGE OF OVER 200 LBS. PER COLONY, AND BLACK BEES TOO.

I commenced bee-keeping last spring. I bought 50 swarms, one of which deserted when let out of the hive, after being taken off of the cars, leaving me 49 when the honey season opened. I commenced extracting May 29, and stopped July 6, after extracting 9839 lbs. of honey, which was mostly from white clover. I increased to 81 swarms. The average per swarm was 200¼ lbs. When they went into winter quarters they had 30 lbs. apiece. My bees are all blacks. They are in quadruple chaff hives. About the first of November I moved them about a mile. I had three teams, and two extra men, besides myself and horse, and it was all that six of us could do to lift them on the wagon. We moved them in half a day. They had a good fly the 11th and 12th of this month.

Brodhead, Wis., Dec. 20, 1886. P. H. FELLOWS.

ENCOURAGING WORDS FOR ALSIKE AND BUCKWHEAT.

I commenced the season with 60 colonies, spring count; increased to 100 colonies; got 2000 lbs. of honey in one-pound sections, and 500 lbs. of extracted, about half white and half dark. I worked some bees for my neighbors. I brought home my share of the increase, 15 colonies, making me 115 colonies to winter; 50 are packed in dry sawdust in chaff hives on summer stands; 65 are in the cellar. All are heavy with natural stores. The season commenced very early, but clover did not last long, on account of dry weather. Basswood did not bloom at all.

ALSIKE.

I had 16 acres of alsike clover. Bees worked on it early and late until the drought. It makes very nice hay for all kinds of farm stock. I sowed 16 acres this year, mixed with timothy. I sowed the silverhull buckwheat so as to fill up the gaps between other bloom as much as possible. I sowed one acre in August. Bees worked on it the most I ever saw bees on buckwheat. We cut it in the afternoon, and the next morning uncle Tom Frost had killed every thing so that the bees did not work any more. We drew the buckwheat into the barn, and thrashed it, and had 25½ bushels. This was getting three crops from the same ground in one season, as we cut about two tons of hay off before we plowed it for buckwheat. We think we got as many pounds of honey as we had of buckwheat from that ground. Taking the season together, it was very poor for honey.

W. T. ROE.

Candro, N. Y.

GLEANINGS IN BEE CULTURE.

Published Semi-Monthly.

A. I. ROOT,
EDITOR AND PUBLISHER.
MEDINA, O.

TERMS: \$1.00 PER YEAR, POSTPAID.

For Clubbing Rates, See First Page of Reading Matter.

MEDINA, JAN. 15, 1887.

Unto every one that hath shall be given, and he shall have abundance; but from him that hath not shall be taken away even that which he hath.—MATT. 25: 29.

New names and renewals are coming in at a rapid rate. Thanks, friends, for your kind support.

FLAT-BOTTOMED FOUNDATION.

We have just succeeded in making some beautiful flat-bottomed foundation send for; samples and prices. In weight, we believe it comes as near the natural foundation made by the bees as any thing we ever turned out. Mr. T. F. Bingham said he preferred the flat-bottomed foundation for sections.

CLOSED-TOP SECTIONS.

At the Ohio Convention, when an opinion was called for, not one of the members present favored the use of closed-top sections, because it would not permit tiering up. Our readers will please take note, that this confirms the opinions expressed lately in the answers of our prominent apiarists, to the question-box department in a late issue of the *A. B. J.*

FOUL BROOD, AND FALSE ALARM IN REGARD TO IT.

On page 10 of our last issue, friend Broers protests against a statement made in a former issue by one of our contributors, that foul brood was in the neighborhood. From a letter just received from friend McCamant, it seems the whole matter was only a hearsay. Their bees *died*, it is true, but probably from starvation, as friend B. suggests, and they *guessed* it must have been foul brood.

HAVING A SPACE BELOW THE BROOD-COMBS FOR WINTERING.

In my remarks at the foot of friend Doolittle's article, page 976, Dec. 15, I omitted to mention that Mr. H. R. Boardman, East Townsend, O., has for years been a vehement advocate of this idea. Our readers will perhaps recollect him when I mention that I gave his portrait as "the man who winters bees without loss;" and, if I am correct, he has continued to winter his bees almost without the loss of a colony, year after year, although he counts his stocks by the hundreds.

VISITING THE HOME OF THE HONEY-BEES DURING THE BUSY SEASON.

A NUMBER at the Ohio Convention expressed to us their desire to visit, at some future date, the Home of the Honey-Bees, but that they would prefer to come and see us when we are in "full blast," and that, if they came during this time, they feared they would be unwelcome. To be sure, you would be welcome, dear friends. Come at any time; and if we are too busy to show you about ourselves, we

will see that some one does give you the proper attention. We have many visitors to our place every season, but we never have had too many.

GOING WEST.

MRS. JENNIE CULP, before leaving the convention, informed us that she would probably not be able to attend another Ohio State Convention; that she proposed selling her farm, apiary and fixtures, with a view of going west with her boys. She stated, that, after selling, she probably would not do much with bees. As the work in the apiary has now gone beyond her strength, and as she is not obliged to work for a living, she has so decided. It is with some degree of regret that we give this intelligence to the friends; but we hope that, when she is located in her new field, we may again hear from her through the columns of GLEANINGS.

MANUFACTURING COMB HONEY.

The people who stick to the falsehood about manufactured comb honey have finally found a place in Chicago where a man could be seen sealing up the combs with a hot iron. They never saw him making the *combs* out of paraffine, but he was simply sealing them up. Our enterprising friends of the *A. B. J.*, when notified, made haste to see the sight. What do you suppose they found? A Chinaman near a window, ironing collars and cuffs with a flat-iron! Did you ever? Ernest suggests that I have forgotten to state that the innocent-looking laundryman had a cake of *beeswax* by his side, with which to polish his flat-iron.

SENDING DELEGATES TO THE OHIO STATE BEE-KEEPERS' CONVENTION.

A MOTION was carried at the Ohio State Convention, mentioned in another column, that we invite, through the columns of GLEANINGS, the county and district bee-keepers' conventions to appoint and send delegates to the State Convention to be held at Columbus, about a year from date. The object of this is to put the county and district associations into direct communication with the State association. We therefore earnestly request that the secretaries will see that this matter is brought properly before their respective bodies, and that the members may act upon it. We give you notice thus early, that all arrangements may be completed in time.

BEE-KEEPERS' PRICE LISTS.

OUR facilities for turning out first-class price lists and general job work were never more complete than now. If you have any thing in this line, write us for prices and samples. Remember, we have a very large stock of wood cuts, especially for price-list work. The following have been printed at this office: A 22-page price list, apiarian implements and bees and queens, for P. L. Viallon, Bayou Goula, La.; a 4-page large-size list of bee-keepers' supplies for J. D. Rusk, Milwaukee, Oregon. The following have been sent to this office:

The first comes from C. M. Goodspeed, Thorn Hill, Onondaga Co., N. Y., Specialty, the leading papers and magazines; also Italian bees and queens' raspberry and strawberry plants, also clover, poultry, etc.

A very neat 36-page circular has been sent us by James Heddon, giving nice drawings of his new shallow hive, and much important and valuable matter on various subjects. He also offers honey in attractive packages at very low prices.

A 34-page circular comes to hand from C. F. Muth & Son. Specialties, honey and apiarian supplies.

From E. T. Flanigan, Belleville, Ill., an 8-page list of bees, hives, fdn., small fruit, etc.

From G. W. Stanley, Wyoming, N. Y., a 12-page list.

SPECIAL NOTICES.

DISCOUNTS UNTIL FEBRUARY 1.

REMEMBER, we allow 4 per cent discount on all purchases of whatever nature, made between now and the first of February.

SIMPLICITY HIVES.

WE have been making some changes in our table of prices; and while it does not affect the price of a complete hive, we have been compelled to advance the price of bodies only, without rims or covers. Our boys have just made the discovery that we have been selling bodies only, for less than cost.

MAPLE SYRUP.

IN view of the crop soon to come, we offer the remainder of the lot mentioned on page 1002, Dec. 15 issue, at 80 cts. per gallon, or 90 cts. with package included to ship it in. The new crop will be in market probably about March 1.

COPPER BATH-TUBS.

WE have found the manufacturers of the copper bath-tubs, referred to on page 884, GLEANINGS for Dec. 1, and are prepared to furnish a tub of 10-oz. copper, 5, 5½, or 6 ft. long, at an even \$12.00, f. o. b. in New York. The regular price is \$13.75. They are made in a neat wooden box, ready for use, and they can be set in the corner of your bath-room. They are furnished with a brass plug in the bottom, to let the water off.

THE ABBOTT HONEY-KNIFE.

WE have just had a very pleasant visit from Mr. T. F. Bingham himself, resulting in an arrangement (paying him a royalty) in regard to the honey-knife, whereby we can sell them as we proposed, and have it satisfactory to all parties. We are satisfied, after having carefully examined the steel in friend Bingham's honey-knife, and in friend Abbott's foreign copy of it, that the Bingham honey-knife is greatly superior in the quality of steel. The Abbott knife, however, is a very good one for the money.

REDUCTION IN THE PRICE OF HONEY-EXTRACTORS.

IN view of the close prices on almost all staples, we have reduced the price of our Langstroth honey-extractors to \$6.00 instead of \$7.00; and all sizes from No. 1 to No. 5 will be \$6.00. All numbers above 5 have been correspondingly reduced. Send for new price list. We have also made an important reduction in circular-saw mandrels. Our \$10.00 mandrel for holding a gang of 9 saws is now reduced to \$7.50; the \$6.50 mandrel to \$5.00; the \$4.00 mandrel to \$3.50; and the \$2.50 mandrel to \$2.25. Our mandrels were never better made than now, and are the same we are using every day in our wood-working department.

PERFORATED ZINC TO DEALERS.

As perforated zinc is proving itself a necessity to the best results in securing large crops of honey, and as the perforations in the zinc of our make are *just right*, according to the opinion of the Michigan Bee Convention, we have determined to offer dealers who advertise our zinc in their catalogues, a special discount. Our prices are as follows: 1 sheet, 23×96 in. (18½ sq. ft.), \$1.50; 2 or more sheets, 5 per cent off; 10 or more sheets, 10 per cent off; less than a sheet, 10 cts. per sq. ft. Ten honey-boards, 14×19½ for Simplicity or chaff hive, \$1.50; 100 or more, 10 per cent off; less than 10, 16 cts. each. These honey-boards have a margin of unperforated zinc all round, and have proven easier to remove from the hive than those with a tin binding. Zinc strips, ¾ in. wide and 18 or 19½ in. long, with one row of holes, to be used in the slatted wood-and-zinc honey-board, \$1.00 per 100; 1000 or more, 10 per cent off. To dealers who advertise our zinc we will give a discount of 25 per cent, the same as we do on extractors and metal corners. Write for prices on odd sizes of honey-boards. For 14 in. and under in width, and 19½ in. and under in length, in lots of 20 or more, the price will be the same as the regular boards; but over those measurements the price will be much higher, on account of waste.

HIVES IN THE FLAT.

WE have revised our prices of Simplicity and Portico hives in the flat. There is little if any change in the prices of hives taken as a whole; but where bodies or covers are taken alone there is a marked change. We have also given prominence to "Ten crates," as we call them, in the hope that you will save yourself and us much trouble by ordering regular packages instead of an odd number of hives. We have these regular packages all put up ahead; and when you send us an order we can very often get it off with more dispatch if you order regular packages than if you order odd numbers of hives. Please read the following on page 18 of our price list, instead of the tables of prices of hives in the flat given there. The cuts referred to in the following, you will find on pages 17 and 18 of our price list. If you have lost or mislaid your price list, drop us a postal and we will send you another.

SIMPLICITY HIVES IN THE FLAT (KNOCKED DOWN).

Also Portico Hives and a combination of the two.

See cuts on this and the preceding page. Hives in the flat consist of the material all shaped, ready to nail together. These include metal rabbets for the frames to rest on, but nothing else—no frames, sections, or inside furniture of any kind included at these prices. For brood-frames, see page 14. For sections and wide frames for holding the same, see page 25; comb fdn., page 8, and enamel-cloth sheets, page 10.

The Simp. hives are packed in what we call "Ten crates;" i. e., 10 Simp. bodies, 5 covers, and 5 bottoms, are packed in a crate. This makes five 2-story Simp. hives; but the bottoms and covers are made just alike, and interchangeable, except that the cover is a better board than the bottom, or has a sheet of tin on it to prevent its leaking. Thus you can use the bottoms for covers, making 10 one-story hives by supplying home-made bottoms.

The bottom is used the same side up as the cover, and stands on four half-bricks. The entrance is made by sliding the hive forward a little on the bottom-board. The alighting-board shown on page 3 is a valuable addition. With it the entrance can be contracted or enlarged as necessity demands, in different seasons of the year. Some prefer to make their own bottoms, and want 10 all good covers in their "Ten crates," and no bottoms. Others, again, prefer the ½-story cover shown on the Portico hive on this page.

Again, there are people that *will* have a hive with the old-fashioned Langstroth portico, and a permanent bottom-board, which the Simplicity hive has not. There are some very good reasons for such a preference, where hives are to be moved much; as into the cellar and out, or when they are to be shipped and sold. For these reasons and others, we make and keep in stock the Portico hive shown above. Some want the Portico hive for the lower story and a Simp. upper story with flat cover, like the one shown above. Others want ½-depth bodies for tiering up. Others, still, want their hives made of better lumber than that we ordinarily use, which is No. 2 stock boards. We desire to meet all these wants; and as a help to you as well as ourselves, we have devised the following table, giving the price of each piece in lots of 10.

Ten bodies must be taken to get the 10-rate, but 5 covers and 5 bottoms entitle you to 10-rate on each. You may order any combination that suits your taste and purpose, calling the articles wanted by the names given in SMALL CAPS, and giving the price.

TABLE OF PRICES.

Those who order less than 10 must add one-fifth to these prices to pay the extra expense of packing.

	Price of 10 in flat.
SIMPLICITY BOTTOM-BOARDS	\$1 00
WITH ALIGHTING-BOARD	1 50
SIMPLICITY COVERS	2 00
½-STORY COVERS	2 50
½-DEPTH BODIES	2 00
SIMP. BODY, NO. 2 STOCK BOARDS	3 00
" " " " " " " "	4 00
PORTICO HIVES, with permanent bottom, no cover	4 00
" " " " " " " " without the bottom	3 50
TEN CRATE NO. 1, contains 10 Simp. bodies, 5 Simp. bottoms, and 5 Simp. covers, making five 2-story hives, in flat	\$4 50
TEN CRATE NO. 2, contains 10 Simp. bodies and 10 Simp. covers, no bottoms. Price of crate	5 00
TEN CRATE NO. 3, contains 10 Simp. bodies and 10 ½-story covers, no bottoms. Price of crate	5 50
TEN CRATE NO. 4, contains 10 Portico hives, with permanent bottom-board and ten ½-story covers	6 50
By combining ten crate No. 2 and 10 Portico hives, no covers, at \$4.00, you get ten Portico hives with Simp. upper story	9 00

We can make any other combination you desire, in the same way, because all are made interchangeable.

For 2 ten crates deduct 2 per ct.	For 8 ten crates deduct 6 per ct.
" 3 " " " 3 " "	" 10 " " " 7 " "
" 4 " " " 4 " "	" 20 " " " 8 " "
" 5 " " " 5 " "	" 50 " " " 9 " "

For 100 ten crates you may deduct 10 per cent.

Please order in regular pkgs. of 10 for even if you don't need the extra ones at the time, you soon will.

COVERS.

There are some very great advantages in having a cover flat on top, and plain and simple, made of a single board, like the Simplicity cover. It can be used interchangeably as a bottom-board; it permits the hives to be piled up like square boxes of merchandise; they can be shipped at less rates, because there are no projections and corners to be knocked off, etc. The disadvantages are that it is too shallow for wintering, without an upper story, or for a tier of surplus boxes, it gives little or no chance for ventilation; it can not be raised with one hand easily. As one cover can not well please everybody, and combine all these advantages, we furnish the one shown above. This cover is made with the thin roof-boards screwed against the under side of the ridge-board, and the holes thus left in the gable ends are covered with wire cloth, and serve as ventilators. It is of sufficient depth to cover a crate of 28 1-lb. section boxes, or a good-sized chaff cushion for wintering, and can easily be raised with one hand by the ridge-board, because, except this ridge-board, it is all made of $\frac{1}{2}$ -inch stuff.

CHEAP! CHEAPER! CHEAPEST! BEE-HIVES

ONE-PIECE SECTIONS, CRATES, SHIPPING - CASES, FDN., EXTRACTORS, UNCAPPING-KNIVES, BEE-FEEDERS, WIRE NAILS, AND METAL CORNERS.

Please send your Orders Early Before the Rush Comes.

24-2-4d **B. J. MILLER & Co.,**
Send for Price List. **Nappanee, Ind.**

FREE. A Niagara vine free to all who purchase vines to the amt of \$2.00, up to March 1st. Catalogue of grapes vines free.

24-1-2-3-4d **L. L. ESNHOWER & Co.,** Reading, Pa.

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